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THE SEVENTY-FIRST ANNUAL CONVENTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN ASHEVILLE, N. C., DURING THE WEEK OF SEPTEMBER 3, 1923.

The 1923 meetings of the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy will also be held in Asheville during the week of September 3.

For Association Roster see pages x, xii, xiv, and xv.

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NEW YORK

Reporter on the Progress of Pharmacy, 1916–1921

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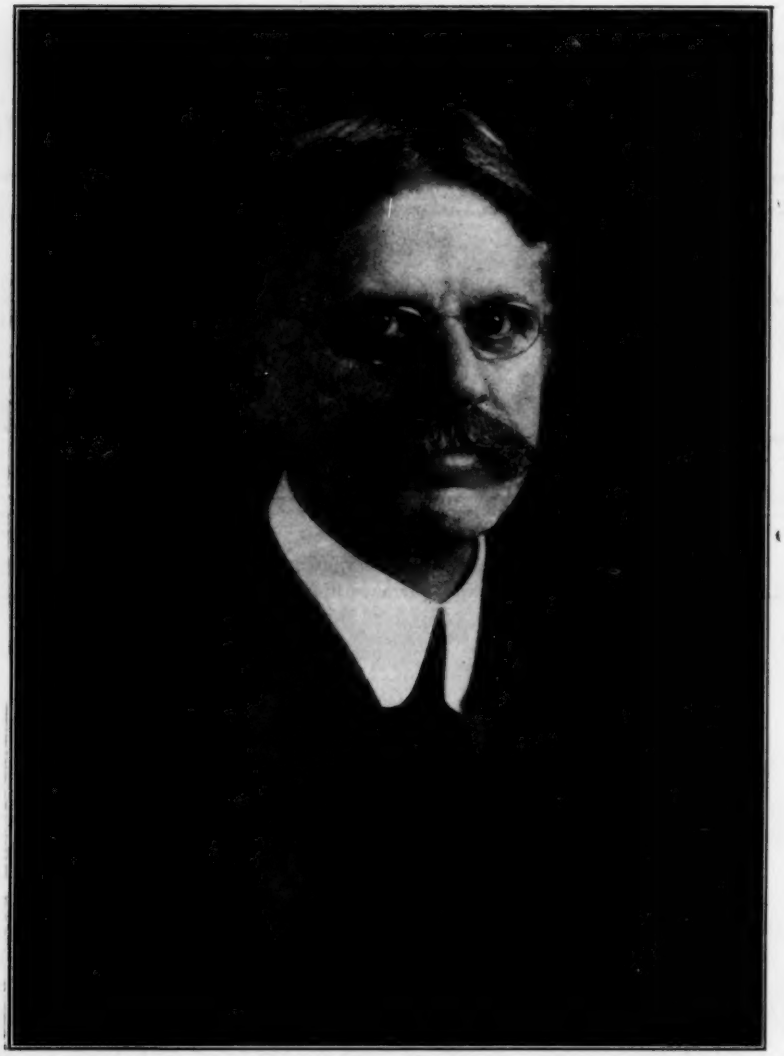

H. V. ARNY

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XII FEBRUARY, 1923 No. 2

HENRY VINCOME ARNY.

PRESIDENT-ELECT OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1923–1924.

Somehow, it occurs to me to say that we are "mighty" glad he belongs to us in New York, and we are very proud of the honor! And we think the American Pharmaceutical Association will be "mighty" glad too; for he has had plenty of experience as a presiding officer, is a ready speaker, and an indefatigable worker—this Henry Vincome Arny, Ph.M., Ph.D., F.C.S., winner of the Remington Honor Medal, in 1922.

Those who are statistically minded should refer to Vol. 5, 1916, p. 341, of this JOURNAL for the account, carefully prepared by Professor Jeannot Hostmann, of the offices which Dr. Arny had exercised and the honors which he had received up to the year 1916. One will find also brief mention of his authorship of "Principles of Pharmacy," and of his many and varied contributions to pharmaceutical journals.

In this account one will not find the date of Dr. Arny's birth, probably because he wears his fifty odd years so lightly that he seems entirely unhampered by dates, as also we might say of his various past honors and offices. The fountain of perpetual youth seems to play somewhere under his unflagging high spirits and his hearty laughter.

Since 1916, he has published the revised edition of his "Principles of Pharmacy," which has extended his reputation far beyond his own country; and he has also gained signal successes and honors as chairman of the American Pharmaceutical Association Committee on Research and as Reporter on the Progress of Pharmacy, especially through the YEAR BOOK, which received this high commendation from the reviewer of the last volume in the official organ of the Pharmaceutical Society of Great Britain—"the volume [Vol. 9, 1920] as a whole is truly representative of the best being done in the pharmaceutical world. . . ."

To this work, as all know, was largely due Dr. Arny's preëminent claim to the Remington Honor Medal, presented to him on May 15, 1922, at a dinner in New York, at which a notable company of pharmacists was present.

Many of the tributes paid to him at that time and later make inspiring reading, as does also his own address of acceptance on "The Place of Pharmacy in the World."

Among the tributes I find an editorial in the *Druggists Circular* (June 1922, p. 206), which pleases me best because it is both comprehensive and true:

"Dr. Arny's activities have been so great and so varied that it would be a difficult matter to point out any field in pharmacy that has not been enriched by his efforts and made to yield more fruit. As teacher, author, editor, research chemist and association worker his labors have been unremitting and effective. Generations yet unborn will profit by them."

But to complete the tribute, I think a word should be added in regard to the wonderful gift of enthusiasm which he possesses. It is much more than a gift; it is a beneficent power—what one modern writer would call "creative enthusiasm"—which, not only to his students, but to all of us who work with him, imparts a flavor of interest and delight to the meanest of every-day duties, and is a constant stimulation towards productive effort.

ADELAIDE RUDOLPH.

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NEW YORK COLLEGE OF PHARMACY,
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THE UNIVERSITY OF NORTH CAROLINA BRANCH OF THE A. PH. A.

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EDITORIAL

E. G. EBERLE, EDITOR 253 Bourse Bldg., PHILADELPHIA

THE OPPORTUNITIES OF OUR PHARMACY SCHOOLS.

TO review the early history of American colleges of pharmacy is to receive inspiration. Hampered by slender means and inadequate facilities and with no public support or endowment, these schools struggled on against heavy odds and won a place through sheer determination and dogged courage. While primarily teaching institutions, conducted for the instruction of apprentices, the old-time pharmacy schools went beyond this and functioned as centers about which the professional interests of pharmacy were grouped. Collections of journals and books as well as of drug specimens were early formed and became the forerunners of our present pharmaceutical libraries and museums. Public lectures were given, meetings of pharmacists were facilitated, codes of ethics were adopted, pharmaceutical periodicals were founded and professional interests generally were conserved and increased.

With the later developments of the pharmacy schools, their more adequate equipment, finer buildings and more generous support we are all familiar. One has but to survey the scientific papers presented at the annual conventions of the American Pharmaceutical Association to appreciate how prominent a part the faculties of the schools are taking in research. Similarly, a scanning of the list of the revision committees of the United States Pharmacopœia and the National Formulary reveals the large proportion of teachers in the pharmaceutical schools who are thus giving effective aid in maintaining high standards for American pharmacy.

It is estimated that there are between nine and ten thousand students in attendance at our pharmacy schools and if the average cost of their instruction is two hundred dollars each, which is believed to be a conservative figure, then the schools of pharmacy in the United States are expending nearly two million dollars a year in carrying on their teaching work.

It is evident then that the progress has been chiefly along lines of teaching and research. But while rejoicing in their success, may we not pause to ask whether the schools are doing their full duty when they devote their energies entirely to teaching and research? Might they not, to the profit of pharmacy, the public and themselves, give greater attention to those fundamental services which characterized their early days? Cannot their libraries and museums be made more available to pharmacists and the public? Should they not endeavor to impress more strongly upon the thousands of young men and women who annually pass through their portals, the importance—nay the absolute necessity—of organization, to the end that the professional no less than the commercial interests of pharmacy shall be adequately served? Would not a presentation of ethics as set forth in the Code of the American Pharmaceutical Association be worth while? Should not the pharmaceutical student be impressed with professional ideals at a time when his mind is best fitted to receive and retain these impressions? Could not the importance of

the AMERICAN PHARMACEUTICAL ASSOCIATION as a "graduate course" to keep him in touch with professional and scientific pharmacy be emphasized? Is there any good reason why the great majority of the graduates of our schools of pharmacy, to the number of three or four thousand each year, should not be inducted into the ASSOCIATION, thereby building it up to greater usefulness while at the same time insuring their continued interest in the professional phases of our calling—an interest only too likely to be submerged in commercial pursuits after leaving the schools?

WM. B. DAY.

EDUCATION VS. LEGISLATION.

THIS, being an odd year, will witness the convening of some forty-three state legislatures. As in the past the pharmaceutical profession and drug trade, manufacturing and distributing, must be prepared to face a vast number of proposals to place further restrictive measures about the conduct of professional and commercial practices. A careful analysis of the bills introduced in the years 1921 and 1922 indicates that about one out of every seven legislative proposals directly or indirectly affects pharmacy and the drug trade. Repeatedly in the past it has been pointed out, and it should now be emphasized again, trade and professional malpractice cannot be corrected by legislation of too severe or regulatory character; additional legislation will not necessarily serve to check what may at times appear as abuses, but only a better observance by individuals of existing laws and the common principles of right as distingushed from wrong.

In a number of states, at least eight, bills have already been presented with the view of confining by law all sales of package medicines, toilet articles and simple household drugs to registered or licensed pharmacists. While there is strong argument, almost irrefutable, in favor of such proposals, there are also one or two fundamental contentions on the other side that should be fully and carefully weighed before pharmacy commits itself in support of such legislation. In the first place there is the very practical question as to what means of distribution can be set up in those rural areas where there are no pharmacies, where even doctors do not dwell, but in which families suffering from ailments of one kind or another are almost wholly dependent upon self-medication for relief. These families should be protected in their right to procure drugs and medicines of proper quality and purity at the least expenditure of effort and money possible, whether it be from wagon distributors or general stores. The consumers in these areas are going to secure their needs, whether it is contrary to statute or not, and some outlaw agency is going to supply them. The suppliers, however, being made outlaw by the terms of the proposed statutes will have some difficulty in procuring goods of proper quality and purity from law-abiding manufacturers and dealers, thus being forced to market simple drugs and medicines of more or less doubtful quality, produced by unscrupulous manufacturers. Such a situation does exist to-day even in those states where there are less restrictive laws than those now proposed. It is a problem of serious concern to both pharmacy and the public.

One only has to refer to the results of narcotic and liquor restrictions to observe the dire consequences of super-restraints upon distributing outlets. The narcotic addict no longer procures his supplies of pure drugs from responsible

sources but gets an ample supply of adulterated "stuff" from an outlaw dealer. The same largely applies to the liquor habitué. In both cases, though, the drug trade and pharmacy are policed from morning until night, saddled with burdensome taxes, detailed records, reports, inspections, bonds, permits, licenses, applications, and the full responsibility for supplying the entire community with quality goods.

Now it is proposed to throw further burdens upon the profession and trade by a mass of state laws which will have to carry with them some regulatory power, some new or enlarged bureaucratic body, employing an army of political appointees, paid and maintained out of more special taxes to be levied on the drug store and the merchandise sold therein. As in all previous similar restrictive legislation, the law-abiding citizens will be harassed, and the general merchandise bootlegger will escape

Pharmacists might well observe that the most severe restrictive measures relating to the practice of medicine have in no way limited the expansion of public use of drugless methods of healing or disease treatment. Furthermore, if the drug and pharmaceutical trades are not naturally the most economical agencies of distributing drug merchandise, they will ultimately have to give way to some other.

The wiser course to pursue, it would seem, is not to seek any more restrictive legislation, but rather to systematically educate the consuming public on two fundamental principles: (1) the importance of buying and using only those drugs and medicines that are of such quality in strength and purity as will serve the purposes for which they are intended; (2) the drug trade and pharmaceutical profession handle and distribute only goods that are of such standards of purity and strength as will serve their intended purposes. Both of these can be accomplished by carefully planned advertising both in the press and by circular letters and pamphlets.

Constructive work along this line will improve the public health and also benefit pharmacy, omitting all the possibilities of regulation and taxation that are bound to follow a short-sighted legislative policy aimed at a few otherwise law-abiding merchants.

C. H. W.

HEALTH DEPARTMENT OF THE LEAGUE OF NATIONS.

V. Cofman, B.Sc., M.P.S., writing in the *Pharmaceutical Journal and Pharmacist* of January 13, on above subject, closes the article with the following paragraph on an International Pharmacopœia: "The utility of a permanent international body dealing with matters related to public health is only too evident. How largely pharmacy, as well as medicine, is interested in it is obvious from the work cited in connection with the standardization of vaccines and sera. From this to the international unification of other medicinal preparations is only one step, and the time is probably not distant when the Health Department of the League of Nations may have to take the matter in hand. Would it not be fitting that the initiative should come from the pharmacists? The next meeting of the International Pharmaceutical Federation, to be held in London in July this year, could well put forward a constructive plan for approaching that difficult goal—an international pharmacopœia. Such an initiative would bring credit to the profession and show its progressive ideas. During the last few years we have seen so many schemes formerly thought Utopian become part of every-day life that it would be hypercritical to doubt the practicability of having uniform pharmaceutical preparations all over the world."

THE INFLUENCE OF HYDROCHLORIC ACID IN CINCHONA PREPARATIONS.

THIRD PAPER.*

BY WILBUR L. SCOVILLE.

This subject was first reported[1] in a paper presented at the Washington meeting in 1920. At that time it was shown that the addition of hydrochloric acid to the menstruum in percolating both yellow and red cinchona results in a more rapid and complete extraction of the alkaloids and also that the acid showed a marked influence in reducing precipitation in the fluidextracts and tinctures. It was further shown that the use of acid in the process of assay of cinchona resulted in a purer alkaloid yield and consequently in more correct results.

In a second paper[2] on the same subject presented last year at New Orleans, the strength of acid was further varied and also its manner of use. Lactic acid was also tried. At this time it was shown that not the amount but the concentration of the acid is the principal factor in facilitating extraction, and that there is an optimum strength of acid which produces the best results. Lactic acid was found to be decidedly less efficient than hydrochloric acid for aiding the extraction.

It was found that a strength of about 1.6% of hydrochloric acid, used without heat and in the first portions of the menstruum, gave the best results with yellow cinchona. Heat did not help the extraction materially, and the strength of alcohol used has more influence in stabilizing the fluidextract or tincture than in the extraction.

Most of the work to this time had been done on yellow cinchona, though a little was reported in the first paper on red cinchona. It remained, however, to verify the most promising method on other samples of yellow cinchona and to ascertain the optimum concentration of acid for red cinchona.

The following experiments, additional to those previously reported, have been tried:

1. A yellow cinchona, assaying 6.4% of total alkaloid, was extracted with hot water containing two drachms of hydrochloric acid per quart, or about 0.3% of acid. About 1500 cc of acidulated water was used on 250 Gm. of the drug. The aqueous extract was evaporated to a soft extract, taken up with 76% alcohol and the volume adjusted to 250 cc. The clear fluidextract assayed 3.9% of total alkaloids showing 61% of exhaustion. Here again it is shown that heat and a weak acid give disappointing results.

2. The same drug was extracted with a cold 0.2 per cent. sulphuric acid. Extraction of the alkaloids was so slow that after 4000 cc of percolate were obtained from 250 Gm. of drug and the drug was still far from being exhausted, this plan was abandoned. A weak aqueous solution does not make an effective solvent for cinchona.

3. The drug (250 Gm.) was exhausted in the usual way with 76% alcohol, using no acid. The first 200 cc of percolate assayed 1.125% of total alkaloids, showing 17.6% of exhaustion. The finished fluidextract assayed 2.35% of total alkaloids, showing 37% of exhaustion. Thus fluidextract yielded 18.64 Gm. of dry extractive per 100 cc.

4. The menstruum used for this experiment consisted of (*a*) 250 cc of 76% alcohol containing 1% of hydrochloric acid (absolute); then (*b*) 76% alcohol. The first 200 cc of percolate assayed 2.00% of total alkaloids, indicating 32% of exhaustion, and the finished fluidextract assayed 5.02% of alkaloids, indicating 78% of exhaustion. This yielded 12.96 Gm. of dry extractive per 100 cc.

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* Scientific Section, A. Ph. A., Cleveland meeting, 1922.

[1] JOUR. A. PH. A., 9, 864, 1920.

[2] *Ibid.*, 10, 844, 1921.

5. This menstruum consisted of (*a*) 250 cc of 76% alcohol containing 2 per cent. of (absolute) hydrochloric acid, and then (*b*) 76% alcohol. The first 200 cc of percolate assayed 2.20% of total alkaloids, indicating 34.3% of exhaustion, and the finished fluidextract assayed 5.76% of alkaloids, indicating 90% of exhaustion. This sample yielded 22.16 Gm. of dry extractive per 100 cc.

6. The menstruum consisted of (*a*) 250 cc of 76% alcohol containing 3% of (absolute) hydrochloric acid, followed by (*b*) 76% alcohol. The first 200 cc of percolate assayed 2.05% of total alkaloids, showing 32% of exhaustion, and the finished fluidextract assayed 4.65% of alkaloids, showing 72.6% of exhaustion. This sample yielded 19.86 Gm. of dry extractive per 100 cc.

A comparison of these last four samples shows that the use of 1% acid in the first menstruum practically doubles the rate of exhaustion over that of the neutral menstruum, but reduces the amount of inert extractive. In this case about two-thirds as much extractive was obtained but more than twice the activity. This suggests why the acid menstrua show less precipitation than the neutral. In the next case, increasing the acid in the first menstruum to 2 per cent. materially increased the rate and amount of extractive, resulting in a final yield that represented 90% of the drug, and gave a total of 22% of extractive. This last is more than that obtained from the neutral menstruum, but is far below it in proportion of extractive to activity. On further increasing the acidity to 3 per cent. the rate and amount of exhaustion were again reduced, and also the amount of extractive. The most efficient amount of acid for yellow cinchona is again shown to be between 1 and 2 per cent. and this also shows a marked reduction in the amount of inert extractive.

This series of experiments was then carried out on a sample of red cinchona, using first the neutral menstruum (76% alcohol), then 1%, 2% and 3% hydrochloric acid, respectively, in the first 250 cc of menstruum followed by 76% neutral alcohol. Following are the results. The drug assayed 8.00% of total alkaloids.

	First 200 cc, per cent.	Rate of exhaustion, per cent.	Finished fldext., per cent.	Amount of exhaustion, per cent.	Extractive, Gm. per 100 cc
Neutral	2.87	36.	5.62	70.3	30.12
1% acid	4.62	57.8	7.22	90.3	33.74
2% acid	4.60	57.5	7.70	96.0	39.36
3% acid	5.50	68.7	7.81	97.5	42.04

Here again is shown the marked advantage of acid in the menstruum, and it is also shown that red cinchona will be helped by a higher percentage of acid than is yellow. The extractive in this case increased regularly with the strength, but the influence of the acid on the alkaloids is clearly shown. And the increase in extractive is far below the proportionate increase in strength over the neutral menstruum.

After standing six months all of the preparations of yellow cinchona show a marked precipitate. This is less in the samples containing 1% and 2% of acid than in the neutral samples, while that containing 3% of acid has about five-eighths of an inch of magma in the bottom of an eight-ounce bottle.

The samples of fluidextract of red cinchona have all remained clear to this time. None of these samples contain glycerin.

It is evident that red cinchona requires a larger proportion of acid for extraction and preservation than does cinchona calisaya. And it is again evident that there is an optimum amount of acid for each variety. To use less than the optimum means less efficient extraction and more subsequent precipitation, and to use more than the optimum means the same. For cinchona calisaya the most efficient proportion of

acid is about 1.5% of hydrochloric acid, based upon the weight of drug used and employed in the first or macerating menstruum. For red cinchona the most efficient proportion is 2.5% to 3%, on the same basis.

As shown in a previous paper[1] while hydrochloric acid when used in the right proportions markedly reduces the precipitation, it is not of itself an efficient preventive. The addition of glycerin, of sugar or of glucose all act as protectives in these preparations. The more than sixty cinchona preparations made in 1918 and 1919 with a view to testing the influence of acid and of glycerin and other protectives have all been kept in the laboratory in a diffused light. These have all been reëxamined, with the following results:

All the neutral preparations—fluidextracts of red and yellow cinchona, tincture of yellow cinchona and compound tincture of cinchona—now contain a heavy precipitate. Those containing glycerin (10% in the fluidextracts and 7.5% in the tinctures) all contain much less but in most cases show at least a small precipitate. Those containing sugar or glucose in the same proportions as of glycerin in corresponding samples, all compare favorably with the glycerinated samples. In other words, glycerin sugar and glucose all act as protectives in cinchona preparations and are almost equally efficient. A slight advantage is seen in glycerin, and glucose is slightly less efficient than sugar but the differences are not very marked.

The acid preparations all show less precipitation than the neutral, and again the addition of glycerin or sugar or glucose is of advantage. Most of the preparations made four to five years ago with acid and preserved by the addition of glycerin or sugar are now clear or very nearly so. Further, these preparations show that the finished preparation should contain its full proportion of glycerin (or sugar) as well as of alcohol. In other words, in diluting a fluidextract or tincture to its standard alkaloidal strength, the diluting liquid should be adjusted so that the finished preparation will contain its full quota of glycerin as well as of alcohol. By so doing precipitation is reduced to a minimum—or entirely prevented.

SUMMARY.

More than 75 experiments have been made on cinchona preparations with a view to learning the best menstruum and process of manufacture for them. As a result of these the following conclusions are drawn:

1. The present official menstrua for the official preparations of cinchona contain the best proportions of alcohol for these. Glycerin is also advisable, but is better added to the percolate or concentrate rather than used in the menstruum.

2. Hydrochloric acid aids very markedly in extracting the alkaloids of cinchona and should be used in the following proportion and manner:

For cinchona calisaya a 1.5% solution of (absolute) hydrochloric acid in the official menstruum (without glycerin), this amount of acid to be based on the quantity of drug used and employed in a corresponding quantity of menstruum used for the initial maceration. Percolation is then continued with a neutral menstruum. Thus for 100 Gm. of drug, the first 100 cc of menstruum used should contain 1.5% of hydrochloric acid, and the drug macerated in this for 24 to 48 hours. For red cinchona the first equivalent menstruum should contain 2.5% to 3.0% of hydrochloric acid, used in the same way.

[1] "The Function of Glycerin," JOUR. A. PH. A., 9, 868, 1920.

3. Hydrochloric acid, used in proper proportions, imparts stability to the preparation, reducing precipitation and holding the alkaloids in solution. This property is further aided by glycerin or sugars.

4. Lactic acid is inferior to hydrochloric acid in extracting cinchona.

5. Hot extraction is of no advantage for cinchona, and may be of disadvantage through the formation of phlobaphenes.

LABORATORY OF PARKE, DAVIS & COMPANY,
DETROIT, MICHIGAN.

THE QUANTITATIVE DETERMINATION OF SPARTEINE IN TABLETS.*

BY PAUL W. JEWEL.†

This investigation was carried out with a view to developing a method for the quantitative determination of sparteine which would be rapid and simple and which could be depended upon to give accurate results.

This alkaloid was discovered in 1851 by Stenhouse,[1] who isolated it from *Spartium scoparium* Linné and later from the common Scotch Broom, *Cytisus scoparius* (Linné), Link, which now forms the chief source of supply. The alkaloid occurs in all parts of the plant and the amount present varies from 0.23% to 0.68%, being richest in March and poorest in August just after flowering.

Physical Properties.—Sparteine is a colorless oily liquid with a heavy odor recalling aniline, turning brown on exposure to air, especially if heated; readily soluble in alcohol, chloroform and ether, slightly soluble in water, and insoluble in benzine. Its density is greater than water, its specific gravity being 1.0196 at 20° C. It is laevo-rotatory. Its specific rotation in alcohol is variously given as —16.42°[2] and —14.6°.[3] The sulphate of the U. S. P. shows a rotation of — 22.12° in water.[2] The refractive index of the pure alkaloid is 1.5291 in sodium light at 20° C.[2] The boiling points given by various authors are: 328° C.,[3] 288° C.,[6] 311° C.,[7] 326° C.[8] Under 18 mm. pressure it boils at 188° C., and at 754 mm. in hydrogen it boils at 325° C.[2] It is slightly volatile at 100° C., if the heat is applied for a considerable length of time as is shown by an experiment described later in this paper. H. W. Jones[4] states that in the quantitative determination heat must be avoided, but gives no reason for this observation.

Chemical Properties.—Sparteine has the formula $C_{15}H_{26}N_2$, mol. wt. 234.30, and the sulphate of the U. S. P. is $C_{15}H_{26}N_2H_2SO_4.5H_2O$, mol. wt. 422.39. A number of attempts have been made to determine the structure of this alkaloid, perhaps the most comprehensive of which is that by Moureau and Valeur;[11] but so far its structure has not been established. It is readily oxidized, giving a great variety of oxidation products, none of which have, however, thrown much light on the structure of the alkaloid. The brown color observed when sparteine is heated in air is probably due to a partial oxidation. According to the British Pharmaceutical Codex, sparteine absorbs oxygen under the influence of air and light, becoming yellowish to dark brown and thicker.

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* Read before Scientific Section, A. Ph. A., Cleveland meeting, 1922.

† Junior chemist, New York Station, Bureau of Chemistry, United States Department of Agriculture.

It is strongly alkaline and forms well-defined salts. It is monoacidic to phenolphthalein and litmus, but diacidic to methyl orange.[2]

The free alkaloid is precipitated from solutions of its salts by ammonia, sodium carbonate and sodium bicarbonate, and is soluble in an excess of these alkalis. With sodium or potassium hydroxide the alkaloid separates and collects on the sides of the flask in oily drops.

Qualitative Tests.—The one distinctive test of the U. S. P. IX was tried and gave excellent results, large, green, well-formed crystals of sparteine tetra-iodide appearing in a very few minutes. To about 0.10 Gm. of sparteine sulphate add 25 cc of ether and a few drops of ammonia water. Shake. Add an ethereal solution of iodine 1:50 until the resulting mixture is orange or brownish red upon shaking. Characteristic greenish brown crystals form in the presence of sparteine.

Jorissen's[9] test also gives excellent results: To a solution of the alkaloid in ether add a small amount of sulfur; mix by shaking and pass in hydrogen sulphide. A bulky, red precipitate is formed if sparteine is present. Coniine gives an orange and atropine a yellow precipitate under these conditions.

The following test reported by E. H. Grant[10] was tried but found to be less characteristic than the preceding ones:

To the alkaloid add a few drops of bromine water and evaporate to dryness. While still hot, invert over a dish of ammonia; a pink color is developed if sparteine is present. Caffeine gives a purple color under these conditions which can be distinguished from that given by sparteine only by comparison of the two. From their physiological action, it is hardly likely that sparteine and caffeine would be found in the same preparation, and it would seem that this test should only be used as a confirmation test for sparteine after other tests have given positive results.

Sparteine gives a picrate, crystallizing in needles from hot alcohol, which has a melting point of 208° C.[2]

QUANTITATIVE DETERMINATION.

Gravimetric Methods.—The following method, which, with slight variations, is used for most of the commoner alkaloids, was used and found to be entirely satisfactory both as regards accuracy and speed and ease of operation.

Dissolve a sufficient number of tablets or such a weight of the substance as will yield about 0.25 Gm. of pure alkaloid in water, with the aid of a small amount of dilute sulphuric acid if necessary. Make the solution alkaline to litmus with ammonia and shake out with three portions of chloroform, using 30, 20 and 10 cc, respectively. Combine the chloroform washings and extract with dilute sulphuric acid, using three portions of 30, 20 and 10 cc, respectively. Combine the acid portions, make alkaline with ammonia and reëxtract with chloroform as above, filter the chloroform through a paper previously moistened with chloroform, remove the chloroform by means of the steam-bath, allowing the current of air flowing through the hood to play over the surface of the evaporating liquid, which may be done by adjusting the windows of the hood to the level of the beaker. Use 2 cc of ether to aid in removing the last traces of chloroform. Remove the dish from the steam as soon as the ether and chloroform are completely removed, so that the heating may not be unnecessarily prolonged; cool and weigh. Multiply the weight of sparteine alkaloid obtained by the factor 1.8028 to get the amount of sparteine sulphate U. S. P. present in the original sample.

The residue thus obtained should be a clear, nearly colorless, oily liquid, with no trace of crystalline or other solid material present.

A number of hypodermic tablets of sparteine sulphate from reputable manufacturers were analyzed by this method, with the following results:

Size; gr.	Declared, Gm.	Found, Gm.	Variation, per cent.
1/30	0.0021	0.0021	None
1/10	0.0065	0.0064	−1.5
1/30	0.0021	0.0022	+2.3
1/30	0.0021	0.0020	−6.1
1/2	0.0324	0.0343	+5.7

It must be borne in mind that this method cannot be used if other interfering alkaloids are present; but, since sparteine is nearly always found alone and not in mixtures, as the pure salt, or in tablets containing only sparteine sulphate, its application may be regarded as practically universal.

Allowing the air to blow over the evaporating liquid hastens the evaporation and saves time, but the results are not altered if this is not done unless the alkaloid is allowed to stand on the steam-bath for a considerable length of time after the chloroform is gone. An electric fan may be substituted for the air current of the hoods for this.

It has been suggested that the volatility of sparteine could be taken advantage of in separating it from other non-volatile alkaloids. However, sparteine is not appreciably volatile except at high temperatures, and, unless kept in an atmosphere of hydrogen, decomposes rapidly due to oxidation. Separation could be effected on a commercial scale by steam distillation, but this could hardly be used for analytical work.

Objection has been made to methods[4] of this type, where heat is applied to the alkaloid, on account of the fact that, since sparteine is a volatile liquid alkaloid, appreciable amounts would be lost by volatilization if heated. To determine whether or not this objection is valid, the following experiment was carried out:

A sample of sparteine was prepared from sparteine sulphate U. S. P. by shaking out with chloroform, the solvent evaporated, the residue accurately weighed, dissolved in 60 cc of chloroform, and the chloroform removed as stated in the determination given above, using 2 cc of ether to remove the last traces. The resulting residue was again accurately weighed. The loss was not weighable. This residue was then heated for successive intervals, with results as follows:

One hour on steam-bath—loss of 3.1%.

One-half hour more in an electric oven at 100° C.—an additional loss of 1%.

Seven hours more in an electric oven at 100° C.—an additional loss of 2.5%.

From this it would appear that sparteine is slightly volatile at 100° C.; but, if the chloroform is removed as described in the determination above, and the heating discontinued as soon as the ether and chloroform are completely removed, no weighable amount will be lost.

Volumetric Methods.—When it is desirable to check the accuracy of a gravimetric determination of most of the common alkaloids, or when it is difficult to obtain the alkaloid in a sufficiently pure form to weigh, it is often possible to titrate the residue from the gravimetric determinations with standard acid and alkali and from the amount of acid consumed by the alkaloid calculate the amount of

alkaloid present. An attempt was accordingly made to titrate the residues from the gravimetric determinations of sparteine with a view to checking their accuracy.

The results thus obtained were not as expected. No end-point could be obtained and even an excess of alkali did not give a distinct yellow color. Probably the reason for this is that the color of the residue from the gravimetric determination is light brown, as is also the acid solution, and that this color obscures the end-point. No practical means of avoiding the formation of this color could be found and, therefore, this method was discarded as being of no value. If phenolphthalein is used as an indicator in place of methyl red the end-point is distinct enough but the results are in every case too low, 90% of the amount of alkaloid present being the greatest amount which could be recovered in this way.

A method reported by P. Lemaire[5] was tried and found to be of no value for the determination of sparteine.

Sparteine picrate is quite soluble in water and, therefore, the results obtained are far from accurate. This error can be reduced somewhat if the amount of solution used is kept as small as possible, but on account of the fact that even a saturated solution of picric acid is very dilute, the smallest amount of solution it is possible to use still leaves the error too large for even ordinary routine work.

It is a well-known fact that sparteine sulphate can be titrated direct with standard alkali, if no interfering substances are present. Sparteine is monoacidic to phenolphthalein and litmus, and, therefore, in using either of these indicators, the end-point will appear when exactly one-half of the sulphuric acid present is neutralized. One cc of sodium hydroxide then is equivalent to 0.0084478 Gm. of sparteine sulphate U. S. P. To methyl orange sparteine is diacidic, and the factor therefore will be 0.0042239. No reference could be found in the literature to the reaction of sparteine toward methyl red, and since this indicator has several advantages over methyl orange or phenolphthalein and is preferred by the writer for practically all alkaloids, an experiment was made to determine its reaction toward this alkaloid. A sample of pure sparteine sulphate U. S. P. was weighed, dissolved in distilled water, methyl red indicator added, and titrated with standard $N/50$ sodium hydroxide. It was found that one cc of $N/50$ sodium hydroxide was the equivalent of 0.0084478 Gm. of sparteine sulphate U. S. P. and the alkaloid is, therefore, monoacidic to methyl red.

Phenolphthalein may be used in place of methyl red; it appears to be fully as accurate, and the end-point is very distinct.

This method is very accurate when no interfering substances are present, but can hardly be depended upon for mixtures or tablets, the constituents of which are not definitely known. In practically all cases the results obtained by this method will be found to be accurate, as sparteine sulphate nearly always is found alone and interfering substances are usually absent.

The end-points are very sharp and distinct if the indicators used are of good quality. No trouble has been experienced by the writer in this respect with phenolphthalein or methyl orange, but one sample of methyl red was met which could not be made to dissolve completely in alcohol and which gave a very indistinct color change, no amount of alkali serving to give it a yellow color. However, the methyl red indicator used in these experiments was entirely satisfactory in every way.

Since methyl red changes from red in acid to yellow in alkali without any intermediate tint, it is much to be preferred to methyl orange. In the presence of carbonates the change is not so marked, the color "sliding" from red through brown to yellow. However, standard solutions free from carbonates can quite easily be prepared and the additional trouble is well repaid in the excellent results obtained. It is an exceptionally delicate indicator especially for alkaloids, and the end-point occurs when the solution is practically neutral. The hydrogen-ion concentration of the solution, at the point where the color of methyl red changes, is 10^{-8}, and the hydroxyl-ion concentration 10^{-6}, that of distilled water being 10^{-7} in each case.[12]

The following method, which has been used successfully for apomorphine, and which was said to be a method for the determination of apomorphine and sparteine, was tried. Several analysts have attempted to use this method and all report that a distinct end-point is difficult to obtain and that the results were inaccurate. The method follows:

Dissolve the tablets in water; make alkaline with sodium bicarbonate, and shake out with three 30-cc portions of ether. Wash the ether three times with 5 cc of water, separating carefully. Add an excess of $N/50$ acid, shake well, and draw off the acid solution. Wash the ether three times with water and combine the aqueous solutions. Add methyl red indicator and titrate at once.

No trouble was had with the end-point obtained, but the results were far from being accurate. Only a small amount of the sparteine present was indicated by the titration. Upon evaporation of the ether a considerable amount of alkaloid was found to be present, indicating that the prescribed treatment with acid does not quantitatively remove the alkaloid from the ether. A modification of this method was tried out to determine whether or not a longer contact of the acid with the ether solution of the alkaloid would result in a quantitative recovery of the alkaloid. Carried out as above the recovery is about 2%. After shaking intermittently for one hour the recovery was 5.5%, and after shaking for two hours was 6.1%. This would seem to indicate that almost no amount of shaking would ever remove all of the alkaloid from the ether solution. It would therefore seem that this method should be discarded as being of no value for the determination of sparteine.

SUMMARY.

Sparteine is only slightly volatile at 100° C., the loss being only 3.1% after an hour's heating at this temperature, 1.0% more after half an hour, and at the end of seven hours' continual heat 2.5% additional. The use of a small amount of heat does not affect the accuracy of the gravimetric determination, and the alkaloid is not lost through volatilization in the vapors of chloroform. This is further substantiated by the fact that the quantitative determination of pure sparteine sulphate showed a recovery of 99.3–99.5%.

The U. S. P. and Jorrissen qualitative tests are very distinctive and considered to be preferable to that of E. H. Grant.

Sparteine sulphate U. S. P. is monoacidic to methyl red and to phenolphthalein and may be titrated direct with $N/50$ sodium hydroxide, using these indicators, phenolphthalein being preferable to methyl red.

The picric acid method of P. Lemaire was found to be unsuitable for the quantitative determination of sparteine because of the solubility of sparteine picrate in water.

It was found to be impossible to titrate the alkaloid after extraction with chloroform, as methyl red indicator does not give a sharp end-point. This is apparently due to the brown color of the alkaloid and to partial oxidation. If phenolphthalein is used the end-point is fairly distinct but the results are in every case about 10% low.

Another method which consists of shaking the alkaloid out from ether solution with standard acid was found to be impractical because of the difficulty of quantitatively recovering the alkaloid in this way. The method as given recovers about 2.0% of the alkaloid present, two hours' shaking at frequent intervals recovering only 6.1%.

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SOLUTION OF CHLORINATED SODA.*

BY E. F. KELLEY AND JOHN C. KRANTZ, JR.

The well-known Dakin's Solution and the present official Solution of Chlorinated Soda have been the source of extensive research work among the members of the Pharmacopœia Revision Committee. The fact that Labarraque's Solution is seldom used and the increasing demand for Dakin's Solution makes this a question of great importance.

The chief objection to Labarraque's Solution is its strong alkalinity, on account of which it cannot be used as an irrigating solution in antiseptiology. The recent formula submitted by Samuel L. Hilton proposed the use of a mixture of sodium bicarbonate and carbonate to precipitate the lime salt and thus if any alkali salts are carried into the finished product, the acid carbonate ion, furnished by the acid salt, neutralizes the hydroxyl ion, formed by the hydrolysis of the normal carbonate. Dakin's Solution is best suited for clinical purposes when its hydrogen-ion concentration has a value of (—10); roughly this degree of alkalinity may be observed when the solution is not colored by solid phenolphthalein but is alkaline to an alcoholic solution of the indicator. The solution prepared by Mr. Hilton's formula meets the above neutrality requirement, but has one objection inasmuch as it is prone to become pink on standing.

* Read before Scientific Section, A. Ph. A., Cleveland meeting, 1922.

It is the purpose of this paper to introduce an alternate formula for Dakin's Solution that will meet the neutrality requirement and overcome the tendency to turn pink.

As the objection to the present Labarraque's Solution is its alkalinity, the first step was to select a sodium salt that was not so alkaline as sodium carbonate, and the acid in combination formed an insoluble calcium salt. For this purpose the official anhydrous disodium hydrogen phosphate was selected, as in dilute solutions it met the neutrality requirement before mentioned.

A series of chlorinated soda solutions were prepared from a sample of chlorinated lime, which assayed 31.24 per cent. available chlorine, using quantities of anhydrous sodium phosphate and the lime salt that would yield theoretically a solution containing 2.5 per cent. of sodium hypochlorite.

Three solutions were made by using 100 Gm. of chlorinated lime, and 105 Gm. of anhydrous sodium phosphate to 1000 Gm. showed 1.6 per cent. of sodium hypochlorite by weight. These solutions, however, were neutral to solid phenolphthalein and alkaline to alcoholic phenolphthalein.

Three solutions were made by using 150 Gm. of chlorinated lime to 1000 Gm. with 105 Gm. of anhydrous sodium phosphate. The results obtained were not much higher in sodium hypochlorite content than in the previously prepared solutions. The average content assayed about 1.79 per cent. sodium hypochlorite.

One solution was made using 200 Gm. of the lime salt with 150 Gm. of anhydrous sodium phosphate. This solution yielded 2.75 per cent. of sodium hypochlorite, but was alkaline to solid phenolphthalein. This excess alkalinity was possibly due to the increased quantities of both ingredients used in the preparation.

Following these results, another solution was prepared using 170 Gm. of chlorinated lime and 150 Gm. of sodium dihydrogen phosphate crystallizing with one molecule of water of hydration. Due to the acidity of this phosphate chlorine was immediately liberated from the bleaching powder and the solution turned pink while filtering. The pink coloration is likely due to the oxidation of some manganese salt in the chlorinated lime to the permanganic acid state by the action of the liberated chlorine on the water. This solution yielded only 1.38 per cent. of sodium hypochlorite.

Two other solutions were prepared using 170 Gm. of chlorinated lime and the alkaline and acid sodium phosphates in different proportions. In each solution the chlorine content assayed between 1.4 and 1.5 per cent. and they did not react with an alcoholic solution of phenolphthalein showing a hyperacidity.

In searching for the cause of the low sodium hypochlorite content of the previously made solutions, it was noticed that the precipitate of calcium phosphate was quite voluminous compared with the precipitate of calcium carbonate, when sodium carbonate was used for the precipitation. After enough water had been washed through the precipitate to make 1000 Gm. of finished solution, the precipitate was again washed, and the washings were found to contain a considerable quantity of sodium hypochlorite, showing that the shortage in hypochlorite content was due to the incomplete washing of the calcium phosphate. Many attempts were made, by changing the temperature and concentrations of the reacting solutions, to reduce the bulk of the precipitate, but little decrease in volume was noticed.

In view of the fact that the 2.5% solution is used only after proper dilution to 0.5 per cent., *i. e.*, the original Dakin's Solution, experiments were carried out to prepare the latter. In the making of the first solution 30 Gm. of chlorinated lime and 26 Gm. of anhydrous sodium phosphate were used to make a liter. This solution met the neutrality requirement and assayed 0.83 per cent. of sodium hypochlorite.

Using the last-mentioned quantities and 0.83 per cent. as a basis, the following quantities of chlorinated lime and anhydrous sodium phosphate were used for a liter of a solution that should assay between 0.45 per cent. and 0.50 per cent. of sodium hypochlorite.

Chlorinated lime	20 Gm.
Sodium phosphate, anhydrous	20 Gm.
Water, sufficient to make	1000 cc

Solution (1) prepared from this formula assayed 0.514 per cent. of sodium hypochlorite and solution (2) assayed 0.49 per cent. These solutions were neutral to solid phenolphthalein and alkaline to an alcoholic solution of phenolphthalein.

The directions for preparing the solution are as follows:

> Mix the chlorinated lime intimately with 400 cc of water. Dissolve the sodium phosphate in 400 cc of water heated to 50° C. and pour the sodium salt solution in the lime-salt mixture; shake well and allow to stand for 15 minutes; transfer the precipitate to a filter and after all of the liquid has drained from the precipitate, wash the filter and contents with sufficient water to make the finished product measure one liter.

The method of assay is the same as any other standard chlorine assay using 0.003723 as the sodium hypochlorite factor, *i. e.*, the equivalent for one cubic centimeter of tenth normal sodium thiosulphate V. S. used.

The stability of this solution is comparable to other sodium hypochlorite solutions of a corresponding strength. The percentage of decomposition one week after preparation is approximately 8 per cent. Therefore, any solution assaying 0.5 per cent. when prepared can be safely used one week later, since it would not fall below the lower limit of hypochlorite content, that is, 0.45 per cent. In two weeks the average decomposition was 14 per cent., showing that the solution should be made for periods of 7 to 10 days.

From the experiments described above the writers draw the following conclusions:

1. A 2.5% solution of sodium hypochlorite cannot be conveniently prepared by the above method.
2. The 0.5% solution of sodium hypochlorite can be conveniently prepared, which meets the neutrality requirement and does not become pink on standing.
3. The solution prepared by the phosphate method is as stable as other solutions of sodium hypochlorite of corresponding strengths.

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CHEMICALLY PURE ANHYDROUS DEXTROSE SHOULD BE OFFICIAL IN THE UNITED STATES PHARMACOPŒIA.*

BY JOSEPH L. MAYER.

When starch is treated with an acid it is converted into dextrose; if the process of hydrolysis is complete the end-product is mainly dextrose and the material is solid, but if hydrolysis is incomplete a liquid product is obtained which the U. S. P. refers to, defines and describes as follows:

"Glucose is a syrupy product obtained by the incomplete hydrolysis of starch, consisting chiefly of dextrose (d-glucose) ($C_6H_{12}O_6$ = 180.10) and dextrins."

It is unfortunate that the Pharmacopœia refers to this syrupy material as "Glucose."—

On page 534 of the U. S. P.—among test solutions and reagents, the subject of Dextrose is dismissed with the following few words:—

"Glucose, Dry (Dextrose, d-glucose), $C_6H_{12}O_6$. A white, anhydrous powder which complies with the tests for identity and purity given under 'Glucosum.'"

In reality dextrose, grape sugar, and glucose are synonymous and refer to the crystalline dextro-rotatory sugar with the formula $C_6H_{12}O_6$—confusing the solid and liquid product is unscientific and misleading. In addition, the tests to be applied to the crystalline material should be different than those for the liquid preparation—making the statement: "Complies with the tests for identity and purity given under 'Glucosum,'" is in this case a serious error.

Since the liquid product can be made from any starch it should be known as "Starch Syrup," and thus it would not be employed where "Glucose" is ordered.

Those who are familiar with the use of glucose therapeutically and as a food are fully aware of the fact that to employ this liquid material is dangerous as it contains products which require the digestive apparatus to convert them into dextrose; and it is this very action which, being objectionable, is overcome by employing the end-product—dextrose; and thus synthetically producing the reaction outside of the system.

Chemically pure anhydrous dextrose is now very extensively employed—therapeutically and as a food—therefore it should be officially recognized by the United States Pharmacopœia giving a description, identity tests, qualitative tests for chlorides, sulphates, neutrality, etc., and a purity rubric, including a quantitative method of assay; probably a volumetric one, such as Fehling's or Benedict's, a statement of its specific rotatory power and an ash standard. Mention should be made of the fact that it melts at 146° C. (294.8° F.) and that at a higher temperature decomposes it with the production of caramel. This information would be of value to those who sterilize the solution by autoclaving and to those seeking information relative to what effect this has on the sugar.

The temperature of the autoclave at 15 pounds pressure is 121° C.—therefore the dextrose solution remains unaltered, chemically, during the sterilization.

Since the liquid product now official under the name of "glucose" is of value pharmaceutically—it should be retained in the United States Pharmacopœia, but

* Part of an address before the Monthly Staff Conference, Greenpoint Hospital, Brooklyn, N. Y., December 21, 1922.

a statement should appear in connection with it and the chemically pure anhydrous dextrose, calling attention to their chemical nature and their specific uses.

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NOTE ON THE TOXICITY OF CASTOR SEED.

BY EDWIN DOWZARD.

The poisonous nature of Castor Seed, which is due to the toxalbumin Ricin, has long been known. A considerable amount of work has been done on the extraction of Ricin, and the determination of its toxicity. The most active preparation has been obtained by Osborne, Mendel & Harris.[1]

Ricin is toxic in the extremely small dose of 0.0005 mg. per kilo when administered to rabbits subcutaneously. When given by the mouth, 4 mg. proved fatal to a medium-sized rabbit. A peculiar property of this very poisonous body is the time required to produce toxic effects. When administered subcutaneously, 0.0005 mg. per kilo did not produce death until after the elapse of seven days, while two days were required for 4 mg. administered by the mouth. Even when given in comparatively large amounts, death did not ensue sooner than fifteen to eighteen hours after administration of the dose.

Ricin is, evidently, a very slowly acting poison.

In all the extraction methods described, the oil-free seed is treated with a 10% salt solution. The active ricin and the inactive globulin are both soluble in 10% salt solution. The non-poisonous globulin which is present in a greater amount than ricin is, however, insoluble in water, while ricin is soluble.

A lengthy process is required to separate the globulin from the ricin. It would be much simpler to extract the oil-free seed with distilled water which would dissolve the ricin but not the inactive globulin.

The writer had occasion to make an investigation in connection with the toxicity of ricin, various extracts of castor seed, and castor seed after the removal of the dark skin. So far as the writer is aware, the toxicity of castor seed, when administered by the mouth, has not been determined. For this reason, it was considered to be of sufficient interest to publish the results obtained.

The raw material consisted of the residue from the cold pressing of castor oil. Heat had not been applied to the seed before, during, or after the pressing process. The material contained 23 per cent. of oil. The average oil content of castor seed is about 50 per cent. The toxicity of the unpressed seed was calculated on this basis. Guinea pigs were used as test animals. The method of administration was as follows:

The seed, after separating the dark skin, was broken into small pieces. A portion was accurately weighed and the pieces gently forced down the throat of the animal by means of a stiff broom fiber. The material was readily swallowed after being forced down the throat for a short distance. It was found possible by the above procedure to administer exact quantities of the seed. There are no

[1] *Amer. Jour. Physiol.*, 14, 259–286, 1905.

noticeable symptoms until a considerable time has elapsed after the administration of the dose. Death is preceded by intermittent convulsions. The following table gives the details of the toxicity determinations:

Weight of guinea pig, Gm.	Weight of seed containing 23% oil, Gm.	Equivalent weight of unpressed seed, Gm.	Elapsed time between administration of the material and death, hours
No. 1—520	0.2	0.308	About 12
No. 2—540	0.15	0.231	About 23
No. 3—450	0.10	0.154	About 25
No. 4—400	0.07	0.108	About 45
No. 5—429	0.05	0.077	About 52
No. 6—510	0.03	0.046	Did not die

No. 6 pig was alive and active after several weeks. The toxicity of castor seed is evidently about 0.077 Gm. per 429 grams of guinea pig or 0.179 Gm. per kilo. If the toxicity is in the same proportion about 12.2 grams of castor seed would prove fatal to a man weighing 150 pounds.

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LABORATORY NOTES.

BY PETER MASUCCI AND MARGARET I. MOFFAT.

I. THE DIFFUSION OF PHENOL AND TRI-CRESOL THROUGH RUBBER.

A large percentage of bacterial vaccines intended for industrial, hospital, or community practice are marketed in 5, 10 and 20 cc rubber-capped vials. These vials have as a stopper a puncturable rubber cap which permits the removal of the bacterin without exposure to outside contamination. The dimensions of the cap are about $^{7}/_{8}$ inch in diameter and $^{1}/_{16}$ inch in thickness.

Bacterial vaccines as well as most biological products are generally preserved with 0.5% phenol or 0.3% tri-cresol. During the course of a certain investigation it was shown that on determining quantitatively the amount of tri-cresol in certain lots of bacterial vaccines, the amount found was only about one-third of what had been added as shown by the records. We were at a loss to explain the discrepancy. After much speculation, it was decided to do some experimental work in order to determine whether the loss had occurred by the diffusion of the tri-cresol vapor through the rubber cap.*

A review of the literature showed that much work has been done on the penetration of gases through rubber and the factors that influence penetration. Edwards and Pickering[1] have shown that the rate of penetration of a gas through a given sample of rubber is proportional to the partial pressure difference and increases with temperature. Graham[2] advanced the theory that the penetration consisted in the solution of the gas on one side of the rubber, with a subsequent diffusion of the dissolved gas through the rubber and vaporization on the other side. Recently Venable and Fuwa[3] have found that rubber holds a gas in true solution and not by adsorption; that there is a general relationship between the solubility and density of a gas and degree of penetration through rubber.

* This theory was advanced by Mr. S. S. Sadtler, of the S. P. Sadtler Laboratories.

We found nothing in literature bearing upon the diffusion or penetration of phenol or tri-cresol vapors through rubber. In view of the work on gases, quoted above, we were inclined to believe that phenol and tri-cresol vapors behaved somewhat similarly.

Normal horse serum, physiological salt solution, plain typhoid bacterin, and sensitized typhoid bacterin, all containing 0.3% tri-cresol, were filled in 20-cc rubber-capped vials on 4/18/21. A similar set of products, containing 0.5% phenol, was also filled in 20-cc rubber-capped vials. Simultaneously a small quantity of each product was filled in flame-sealed ampuls.

It was our intention to test each material once a month, but owing to the pressure of other work this was not possible. The materials, therefore, were tested quantitatively for phenol or tri-cresol content only immediately after filling and again on 10/10/22, or approximately 18 months from the date of filling.

The vials and ampuls were kept at room temperature which varied from 20° C. to 30° C. The method used for the quantitative determination of phenol and tri-cresol was that of Elias Elvove[4] which in our experience we have found to be reliable and accurate to ±0.02%.

RESULTS.

TABLE I.

Date of test.	Substance.	Container.	Preservative added.	Preservative found.	Remarks.
4/ 8/21	Normal horse serum	20 cc vial	0.30% tri-cresol	0.30% cresol	
10/10/22		20 cc vial		0.15% cresol	
4/ 8/21		10 cc amp.	0.30% tri-cresol	Not tested	
10/10/22		10 cc amp.		0.28% cresol	
4/ 8/21	Salt soln.	20 cc vial	0.30% tri-cresol	0.29% cresol	
10/10/22		20 cc vial		0.12% cresol	
4/ 8/21		10 cc amp.	0.30% tri-cresol	Not tested	
10/10/22		10 cc amp.		0.29% cresol	
4/ 8/21	Typh. bac. plain	20 cc vial	0.30% tri-cresol	0.26% cresol	
10/10/22		20 cc vial		0.08% cresol	
4/ 8/21		10 cc amp.	0.30% tri-cresol	No ampuls were filled through oversight	
10/10/22		10 cc amp.			
4/ 8/21	Typh. bac. sensitized	20 cc vial	0.30% tri-cresol	0.29% cresol	Vial had no gelatin seal
10/10/22		20 cc vial		0.08% cresol	
4/ 8/21		10 cc amp.	0.30% tri-cresol	Not tested	
10/10/22		10 cc amp.		0.28% cresol	

TABLE II.

Date of test.	Substance.	Container.	Preservative added.	Preservative found.	Remarks.
4/ 8/21	Normal horse serum	20 cc vial	0.50% phenol	0.50% phenol	
10/10/22		20 cc vial		0.37% phenol	
4/ 8/21		10 cc amp.	0.50% phenol	Not tested	
10/10/22		10 cc amp.		0.48% phenol	
4/ 8/21	Salt soln.	20 cc vial	0.50% phenol	0.50% phenol	
10/10/22		20 cc vial		0.33% phenol	
4/ 8/21		10 cc amp.	0.50% phenol	Not tested	
10/10/22		10 cc amp.		0.50% phenol	
4/ 8/21	Typh. bac. plain	20 cc vial	0.50% phenol	0.47% phenol	No gelatin seal
10/10/22		20 cc vial		0.30% phenol	
4/ 8/21		10 cc amp.	0.50% phenol	Not tested	
10/10/22		10 cc amp.		0.48% phenol	
4/ 8/21	Typh. bac. sensitized	20 cc vial	0.50% phenol	0.48% phenol	No gelatin seal
10/10/22		20 cc vial		0.30% phenol	
4/ 8/21		10 cc amp.	0.50% phenol	Not tested	
10/10/22		10 cc amp.		0.50% phenol	

The rubber cap from the vial containing the cresolized salt solution was suspended in acidulated water, and the latter distilled. The tri-cresol recovered amounted to 0.0012 gram. The actual loss of tri-cresol from the vial was 0.034 gram. It is evident that only a very small fraction of the tri-cresol lost was retained by the cap. The conclusion, therefore, is that the loss of the tri-cresol from the vial occurred by the diffusion of its vapors through the rubber cap.

SUMMARY.

Aging experiments covering a period of eighteen months show in a remarkable way that biological products containing 0.3% tri-cresol or 0.5% phenol lose a portion of their preservative when such products are stored in rubber-capped vials at room temperature. The loss is 50 to 70% in tri-cresol, and 20 to 40% in phenol content. The loss can only be explained by the diffusion of tri-cresol or phenol vapors through the rubber cap.

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II. THE FORMATION OF A BLUE COLOR BY THE ACTION OF PHENOL ON CERTAIN RUBBER CAPS.

Our attention was called to the blue color of certain vials containing bacterins suspended in physiological salt solution to which 0.5% phenol had been added as a preservative. The cause of this blue color perplexed us for a while but on investigation we were able to show that there was a definite relationship between the phenol in the salt solution and some ingredient used in the vulcanization of the rubber caps.

By a process of elimination, we showed definitely that (1) the caps developed a blue color when immersed in physiological salt solution containing 0.5% phenol, (2) that phenol was necessary for the development of the color, because when the caps were immersed in distilled water or physiological salt solution no color developed, and (3) that a definite time element was necessary varying from three to thirty-six hours for the full development of the color.

The caps which gave this trouble were a lighter color than those used previously and which had not produced the blue color. Apparently some change had been made in the vulcanization process by the manufacturer of the caps.

On the addition of acid the blue color changed to violet and finally was totally discharged. When the solution was again neutralized with alkali the blue color appeared. Hydrogen sulphide also rendered the solution colorless, which again became blue on standing. Ether extracted the color from the aqueous solution; the ether layer assumed a beautiful purple color.

Of the known substances that give a blue or violet-blue color with phenol are (1) iron salts, (2) ammonia plus a hypochlorite, and (3) aniline plus a hypochlorite. We eliminated iron entirely. Since aniline is a widely used organic accelerator for fast curing purposes, we were inclined to believe that the blue color was due to the interaction of phenol with aniline.

On discussing the matter with the manufacturer, we were informed that a change had been made in the vulcanization process. Instead of the golden antimony previously used, a mixture of aniline and crimson antimony had been substituted as an accelerator. The evidence, therefore, seems to indicate that the use of aniline as an accelerator was responsible for the development of the blue color and thus our suspicions were confirmed.

SUMMARY.

Under certain conditions rubber caps coming into contact with a solution containing 0.5% phenol may give rise to the development of a blue color. The evidence is very strong that the blue color is due to the chemical interaction of phenol with the organic accelerator, aniline, used in the vulcanization of the caps.

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THE STATUS OF DRUG-PLANT GROWING IN THE UNITED STATES IN 1921.*

BY W. W. STOCKBERGER.[1]

The commercial production of drug plants under cultivation did not escape the general depression occasioned in almost every phase of agricultural activity by the sharp decline in prices which closely followed the ending of the World War. As was not unexpected the renewal of imported supplies brought about a competition that could not be met by domestic growers, many of whom discontinued entirely the cultivation of certain medicinals with which they had had considerable success during the war years.

With the year 1921 the effects of the artificial stimulus imparted to drug growing by the World War practically disappeared, leaving the general situation much the same as it was in pre-war years. Although this result might be taken as an indication that there is no further opportunity for drug growing in this country, there are on the contrary good reasons for regarding this apparently unfavorable outcome as actual progress toward the establishment of this industry on a sound economic basis. The situation in 1921 fully sustains the judgment of those who maintained a conservative attitude toward drug growing under war conditions and who realized that no permanency could be assured this industry except through its rational adjustment to approximately normal conditions of crop production and consumptive demand.

The experience of the past five years has greatly extended our knowledge in respect to localities in this country suitable for growing certain drug plants and concerning the labor and risks involved in the care and harvesting of drug crops. This experience has largely dispelled the illusions maintained for some years by a group of over-enthusiasts respecting the possibilities of deriving great monetary returns from drug growing and has brought about a general recognition of the fact that the demand for most of these crops is relatively small and that the suc-

* Read before Scientific Section, A. Ph. A., Cleveland meeting, 1922.

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cessful marketing of drug crops is a more difficult and important problem than that of their production. It must be remembered that during what may be called the war period of drug cultivation popular interest was largely centered upon only a few of the drug plants for which there exist suitable locations among the varied conditions of soil and climate afforded by this country. The keenest demand in the emergency was for certain drugs that had been previously obtainable from abroad at prices so low that their cultivation in this country was not profitable, consequently the efforts of growers were largely directed to the production of such drugs as belladonna, henbane and stramonium to the exclusion of others for which the demand was less urgent.

From such data as it has been possible to obtain it appears that in 1921, in addition to the areas devoted to ginseng, hydrastis, cannabis, and insect flowers, were grown in this country two to three acres each of belladonna and digitalis, about ten of sage, and an indefinite number of small plantings of pinkroot, blood root, lovage, horehound, podophyllum, aletris, senega, cypripedium and other drug plants.

A large part of the ginseng produced under cultivation is grown in Wisconsin, Minnesota, Michigan, Iowa and Ohio, but there are extensive plantings of this crop in New York, Pennsylvania, Georgia, Kentucky, Tennessee, Washington and a number of other states. The gardens range in size from a few square rods to fourteen acres or more. There is no definite information respecting the annual production of cultivated ginseng. The exportation of both wild and cultivated root amount to 157,351 pounds in 1921 and it has been estimated that about 60 per cent. of this quantity came from gardens under cultivation. The value of the cultivated crop as calculated from the average export valuation was $974,097, but the net return to the growers was of course considerably less.

The acreage devoted to the production of hydrastis has been gradually increasing for several years but the slump in the market in 1921 greatly restricted new plantings. Many ginseng growers whose crop had been largely or entirely destroyed by diseases replanted their gardens with hydrastis and many new plantings also were made in various parts of the country where climatic and soil conditions were not so favorable for ginseng. This expansion of acreage and consequent increase in production coupled with the lack of foreign demand resulted in a market situation in 1921 which was very disappointing to the growers. Unfortunately there are no available figures showing the acreage and production of hydrastis. It may be noted, however, that at the end of the year more of this drug was being offered than the market would absorb.

A decline in the cultivation of cannabis was evident in 1921 although small areas were grown in South Carolina, Virginia and Illinois, totaling approximately 25 acres. On account of the low prices obtainable for domestic cannabis several growers have stated their intention to discontinue the growing of this drug.

The production of sage except as a home and market garden crop nearly reached the vanishing point in 1921. Growers have found it practically impossible to produce sage which will fall within the standard limits for total and insoluble ash; consequently their product has been rejected on the market. Some have tried to overcome this difficulty by washing the sage as soon as it was harvested but this adds to the cost of production, interferes seriously with the process of drying,

and endangers the quality of the finished product. With satisfactory offers for their crop in hand some growers have left fields of fine sage unharvested on account of the anticipated difficulty in marketing.

In comparison with the quantity of insect flowers imported from Japan domestic production of these flowers in 1921 was entirely negligible. Small quantities produced experimentally in South Carolina and Wisconsin have been found the equal of Japanese flowers in effectiveness of action on certain insects. Upon analysis, however, the content of insoluble ash of these domestic flowers was found to run considerably above the standard limit of 2 per cent.; consequently dealers refused to purchase them. Should this high content of insoluble ash prove to be a constant characteristic of insect flowers grown in the eastern part of the United States it is unlikely that much interest will develop in their commercial cultivation.

Notwithstanding the unfavorable outlook for commercial drug growing occasioned in 1921 by the disparity between production costs and market returns, stocks of propagating material were maintained by many growers for the purpose of again extending their plantings as soon as conditions become favorable.

No statement regarding drug-plant growing in this country should omit some reference at least to the drug gardens maintained in connection with various schools of pharmacy. In 1921 the growing of drug plants was a feature of the educational work at twenty-six different institutions and at several others plans were being made to establish drug gardens as soon as facilities were available.

Insufficient funds and changes in personnel have restricted the work of some gardens but others have been more fortunate. One of these gardens has won the appreciation and support of the Pharmaceutical Association in the state where it is located and through a section devoted to poisonous plants has developed among the graduate veterinarians in the state a broader interest in the relation of these plants to animal health; at another garden plans are well developed for an important biochemical study of the mints which will involve research in the fields of both genetics and plant chemistry; still another garden has been materially extended through the generosity of a prominent manufacturer of pharmaceuticals who appreciates the increased opportunity which the garden affords for research work on drug plants.

The development of special fields of activity by different gardens is a gratifying sign of progress and clearly indicates the undesirability of a set formula of procedure to be followed by all. The specialization made necessary by the limitations peculiar to each garden will bring about not only an extension of the scope of the work on drug plants but also an increased appreciation of the aim and object of pharmaceutical education.

A REVIEW OF THE LITERATURE IN PHARMACEUTICAL BOTANY AND PHARMACOGNOSY FOR 1921–1922 (AUGUST 1, 1921–AUGUST 1, 1922).*

BY HEBER W. YOUNGKEN.

I am deeply gratified by the large number of excellent papers published during the last year in the field of pharmacognosy and pharmaceutical botany. Scien-

* Scientific Section, A. Ph. A., Cleveland meeting, 1922.

tists, the world over, have attacked with enthusiasm and zeal the perplexing pharmacognostic problems facing them, and, in coöperation with our leading scientific journals, have produced many valuable papers. Although it is not possible in a review of limited nature like this one to mention all those deserving of credit, I must take this opportunity of praising the admirable work of L. Rosenthaler, L. Hecke, T. E. Wallis, G. E. Brunner, A. Viehoever, E. M. De Calvino, E. M. Holmes and A. Stoll. For the purpose of convenience alone, I am going to divide our field into the following sections and mention some of the prominent work accomplished under each heading: (1) morphology, (2) drug cultivation, (3) microanalytic and microchemic methods, (4) drug adulteration and substitution, (5) plant chemistry, (6) ash determination, and (7) history.

With morphology as the first topic under consideration, I mention the paper, "The Structure of Cocculus indicus," by T. E. Wallis, in which there is a detailed, illustrated description of the anatomy of the commercial fruit. Next, I mention the work of the Department of Pharmacognosy of the Philadelphia College of Pharmacy and Science upon the little-described Muira-puama which has been employed in Brazil and France for treatment of various forms of nervous disorders. "Domestic and Imported Veratrum (Hellebore)," by A. Viehoever, G. L. Keenan and J. F. Clevenger, is an interesting study of the rhizomes and roots of *Veratrum viride* and the imported *Veratrum album* in which means are pointed out for the differentiation of the rhizomes and roots of each, as well as for another native form, *Veratrum californicum*. The paper by E. M. De Calvino appearing in a recent number of *Revista Medica Cubana* entitled "Los Pelos Urentes de la Pica Pica" (The Stinging Hairs of Mucuna pruriens)" is also worthy of notice. In this paper, the author discusses in detail the morphology of the entire plant, the histological features of the hairs, their chemical constituents, therapeutic properties, the chemical constituents of the seeds, and treatment of the itch produced by the hairs. She also shows that the hairs of a similar-looking fruit, *Stizolobium capitatum*, differ from those of *Mucuna pruriens* by the absence of hooks and mineral incrustations.

A number of articles have appeared on drug cultivation. Of these, I deem the following as most important: "Cultivation of Buchu," by J. W. Mathews; "Cultivation of Ipecac," by P. van der Wielen, "Cultivation of Ergot," by L. Hecke; "The Influence of Inhibiting Flowering on the Formation of Alkaloids in the Daturas," by A. F. Sievers, and "Henbane Cultivation," by E. M. Holmes. The last-named writer shows that only the largest early-matured seeds of henbane should be retained and planted, after being allowed to remain in water over night, in soil rich in magnesia. It appears to me that the subject of drug cultivation is one of the most fertile fields for experiment, and one that we cannot afford to overlook or slight. The more scientific our knowledge, the greater our yield, and the cheaper and more perfect our product.

With respect to microanalysis and microchemic methods, the paper by T. E. Wallis on "Analytic Microscopy" is among the most important. In this, the writer gives the methods of preparation of crude fiber for counting and also certain counting methods illustrated by the Lycopodium spore and starch procedure.

Considerable work has been done on drug adulteration and substitution. The following titles illustrate the nature of this research: "Adulterated Marjoram," by A. Nestler; "Sarsaparilla Substitute," by O. Frey; "Detecting Tragacanth in

Powdered Acacia," by Triveson; "Convallaria Flowers as Chamomile Substitute," by A. Viehoever and J. F. Clevenger; "Dangerous Adulterants of Poppy Seed," by F. Kryz; "German Substitutes for Senega and Ipecac," by C. Grimme; and "Fake Saffron," by A. Viehoever and J. F. Clevenger. I would fail were I not to mention here the valuable papers of O. A. Farwell on "Adulterated Pellitory," "Adulterated Althæa," and "Scoparius Substitute."

By far, the trend of research of the past year has been along the lines of plant chemistry. Many papers have been published of which time only permits me to give brief mention to examples. Those deserving especial attention are "Constituents of Viburnum Opulus Fruit," by R. E. Bemis; "Constituents of the Leaves of Acer ginalla," by A. G. Perkin and Y. Ugeda; "Assay of Caffeine Drugs," by T. Ugarte; "Alkaloidal Content of Nux Vomica and Kola," by H. B. Weber; "Salicin Content of British Columbian Willows and Poplars," by R. H. Clark and K. B. Gillie; "Alkaloidal Content of the Rhizomes and Roots of Ipecac," by A. Viehoever and C. O. Ewing; "On the Nature and Composition of Irish Moss Mucilage," by P. Haas; "Study of Aspidosperma," by V. Dehrs; "The Acids of Ribes rubrum," by H. Franzen and E. Schuhmacher; "Phytochemical Notes," by J. Wheelan; "Chemical Studies of Veratrum," by A. Viehoever and J. F. Clevenger; "On Ergot," by A. Stoll; "Paniculatin, the Alkaloid of Aconitum paniculatum," by G. E. Brunner; "Hydrocyanic Acid Content of Mouldy Cherry-Laurel Leaves," "Hydrocyanic Acid and Saponin Plants," "Hydrocyanic Acid in Cornus sanguinea," and "Ratio between Total Nitrogen and Alkaloidal Content," by L. Rosenthaler.

Work on ash determinations has been carried on by a number of scientists. A leader among these is E. L. Newcomb who has published "Ash Yield of Buchu;" in connection with C. E. Smith and E. R. Hodel, "Ash of Cannabis;" and with C. H. Rogers, "Ash of Glycyrrhiza." Two other interesting papers are" Ash Content of Drugs," by H. Zornig and F. Adler, and "Determining the Ash of Rhubarb," by J. F. Liverseege.

Finally, among the articles dealing with the history of drugs, "The Drugs of Pegolotti," by Rosenthaler, and "History of Indian Hemp," by de Rosemont deserve especial mention.

The following list of references to papers on Pharmaceutical Botany and Pharmacognosy which have been published within the past year may be found helpful to the workers in these branches of science:

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PHARMACO-THERAPEUTIC INSTITUTIONS.*

BY FRANCIS E. STEWART.

The great question before the American Pharmaceutical Association to-day is, how shall we promote progress in the science of pharmacology and the pharmacologic arts?

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* Read before Scientific Section, A. Ph. A., Cleveland meeting, 1922.

What is meant by the science of pharmacology and the pharmacologic arts; and why is promotion of progress therein of unusual importance at this time?

The science of pharmacology as defined by the Pharmaceutical Syllabus, and by lexicographers generally, is the "science that treats of drugs and medicines; their nature, preparation, administration and effect; including pharmacognosy, pharmaco-dynamics, therapy-dynamics, pharmaceutical chemistry and pharmacy." The pharmacologic arts are the arts of selecting, preparing, standardizing, preserving, prescribing, compounding and dispensing medicine, and applying the same for the prevention of disease, the mitigation of suffering, and the healing of the sick.

How can progress in the science of pharmacology and the useful arts upon which that science is dependent best be promoted? Evidently progress can best be promoted by coöperation between the educational and industrial institutions related to pharmacology, and the practice of pharmacognosy, pharmaceutical chemistry, pharmacy and pharmaco-therapy. Why is the great question of promotion of special importance at the present time? It is especially important at the present time because pharmaco-therapy, which has been forced out of the curricula of the medical schools and colleges by the teaching of surgical specialties, is to be reinstated, and because we are seriously considering the reorganization of the American Pharmaceutical Association, and should not neglect the opportunity of reorganizing in a way to meet the scientific and professional requirements of this pharmaco-therapeutic renaissance and aid the schools of pharmacy in placing themselves in position to meet these requirements also.

What stands in our way of accomplishing this great object? There are a number of serious obstacles to which your attention is invited.

1. *Misapprehension of the Relations That Pharmacy Should Bear to Medical Science and Practice.*—Professor C. S. N. Hallberg, in an address before the Alumni Association of the Philadelphia Medico-Chirurgical College, said: "I see before me a classmate whom I have fought all my life because he opposed the dividing of pharmacy from medicine to make it a separate profession. Mature study of this important subject convinces me that the greatest mistake we have ever made is in the attempt to do this. Pharmacy cannot exist as a profession when separated from medicine. My classmate was right, and we have all been wrong."

Why cannot pharmacy exist as a separate profession from medicine? There are many reasons. The chief of which are these:

In the first place, pharmacy cannot exist as a science when separated from medical science because pharmacy is only part of medical science. As stated by the Standard Dictionary: "Knowledge of a single fact, not known as related to any other, or of many facts not known as having any mutual relations or as comprehended under any general law, does not reach the meaning of science; science is knowledge reduced to law and embodied in system. The knowledge of various countries gathered by an observant traveler may be a heterogeneous medley of facts, which gain real value only when coördinated and arranged by the man of science." "Science is knowledge gained and verified by exact observation and correct thinking, especially as methodically formulated and arranged in a rational system." These facts were apparently appreciated by the "National Committee representing the American Pharmaceutical Association, the American Conference

of Pharmaceutical Faculties, and the National Association of Boards of Pharmacy," when it formulated its Pharmaceutical Syllabus, "Outlining a minimum course of instruction" in pharmacologic science and arts of "three hundred hours' " duration.

The intent of the National Committee, representing the educational institutions of pharmacy, is that the graduates of the pharmaceutical schools and colleges shall be educated in pharmacognosy or "the art of identifying, selecting and valueing drugs;" that the pharmacist shall be acquainted with the subject of pharmacodynamics, or "the action of drugs on healthy tissues;" that he shall also know something about therapy-dynamics, or "the action of drugs on diseased tissues;" that he shall be reasonably intelligent concerning "the administration of drugs," and this requires some knowledge of physiology, pathology, symptomatology and diagnosis; and, finally, he shall be in a position to serve the medical profession and the public at large in a practical manner as a pharmaceutical chemist and pharmacist, guided, in so doing, by his knowledge of "drugs and medicines; their nature, preparation, administration and effect."

We lament the decadence of true pharmacy. How long, I ask you, would pharmacy remain decadent if the graduates of the pharmaceutical schools and colleges went out into life properly armed with the knowledge of pharmacologic science and arts, and used it properly in coördinate practice with the medical profession? Pharmacists with such education would not set up as physicians and prescribe without diagnosis, and thus increase the difficulty of obtaining coöperation between medicine and pharmacy; neither would they aid the manufacturers of nostrums in doing so. A properly educated pharmaceutical profession would stand between the nostrum business of all kinds on the one side, and the medical profession and general public on the other, as an effectual buffer. Such a profession would exert a strong deterrent influence against the commercial introduction of alleged new remedies by misleading advertising, instead of acting as sales agents for their manufacturers.

2. *Misapprehension of the Obligations Imposed upon Pharmacists on Accepting License to Practice Pharmacy.*—Some time ago I asked the president of a state pharmaceutical association what obligations he accepted when he accepted his license to practice pharmacy. He replied: "What do you mean? I am licensed to sell everything for which there is a demand." And this president of a state pharmaceutical society, well known in his community as a man of integrity, was not a little startled when I called to his attention that one of the obligations assumed with his license was not to sell everything demanded, but to refuse to sell anything that he knew as an educated pharmacist was inimical to the public health. The importance of this fact should not be lost to sight now that the teaching of preventive medicine takes the lead in the public mind as of more importance than the diagnosis and treatment of disease. This wave of public health teaching is spreading all over the world especially since the close of the great World War, and conferences are being held frequently to secure closer coöperation between the various agencies engaged in combatting disease with preventive methods. One of the causes of disease is the abuse of drugs, and it is decidedly to the interest of the legitimate drug business in all departments to coöperate with these agencies in this great movement for the conservation of health.

3. Misapprehension in Regard to the Importance of Drug Standardization.—One of the causes of therapeutic nihilism is the uncertainty of action on the part of drugs. This cause was not appreciated to the extent it is now because in times past there were no instruments of precision for determining quantitative pharmaco-dynamic action. Two factors of uncertainty exist, one pertaining to the drug, and the other to the patient. Drug standardization removes one of them and thus gives the physician better opportunity to study the other when called to the bedside. The modern method of giving digitalis in massive doses would be very unsafe except for digitalis standardization. A tincture of digitalis made from a drug selected by the aid of the art of pharmacognosy, and standardized by modern pharmaco-dynamic methods, is a very different preparation than the tincture prepared, as it used to be made, from a drug purchased from the wholesaler without proper inspection, and made into a tincture for dispensing without ascertaining whether the finished product conformed to a definite standard of strength. It is not surprising that the Bureau of Hygiene found that the tinctures of digitalis on the market varied as much as three hundred per cent. when this fact is considered. But standardization adds to the cost, and pharmacists who do not appreciate the importance of standardization object to paying the price for standardized products. Here, again, the responsibility imposed upon the pharmacist when he accepts his license to practice pharmacy is often forgotten. I had the pleasure of meeting a pharmacist in Scotland who told me that he had built up a profitable pharmaceutical business by featuring drug standardization. By persistent use of advertising methods in which personal calls on physicians and leading business men were part he educated his clientele to a just appreciation of standardization as a factor of importance and they were willing to pay the extra cost of this professional service.

The introduction of galenical standardization met strong opposition when first proposed for admission to the U. S. Pharmacopœia on the ground that it would force the retail druggists to purchase from the manufacturing houses instead of making their own preparations. But the gain in therapeutic efficiency due to uniformity was so satisfactory to all concerned that the next revision showed an increase in the number of standardized products. The era of pharmaco-therapeutic renaissance now being ushered in by the work of the great pharmacologists and clinicians will doubtless still further increase the demand for standardized pharmaceutical preparations.

4. Misapprehension of the Relations of Pharmacists and Physicians to the Field of Domestic Medicine.—In a public lecture on "Health and Disease," by Prof. George Dock, M.D., of Washington University, he gave the following advice to the "individual who would obtain and maintain good health:"

> He should in the first place select his grandparents and parents in such a way as to get himself the best constitution possible. He should live so as to preserve that constitution. He should know how to apply simple remedies for the trifling ailments that afflict one—to use a cathartic when he has eaten something indigestible; to dress a wound aseptically; to stop food when the stomach rebels. He should be so educated by his parents, his teachers, his school physicians, his school nurses, his city or village health officers, and in his college hygiene course, as to secure the greatest possible freedom from disease.

It is evident that Dr. Dock recognizes the "right of self-medication" possessed

by the public. It is also the right, and the duty, of physicians and pharmacists, as guardians of the public health, to educate the public[1] in regard to the proper use of medicines in domestic practice. To do this the pharmacist must be taught as much and more about disease and its treatment than is being taught the layman. Let me quote again from the same author showing what he is teaching the layman.

> We are all in the habit of thinking of diseases as if they had separate existences. In fact they are spoken of sometimes as entities—"beings without reference to distinguishing attributes or properties," but in reality there are no such things—there are only people, or lower animals, or plants, with diseases. One cannot think clearly about diseases without thinking of the causes. Headache, for example, occurs from such dissimilar things as infectious diseases, like influenza, typhoid fever or smallpox; or it may come from disease of the eye, or ear; from meningitis, brain tumor, kidney disease, chronic digestive disturbance; nervous exhaustion or anemia or some other cause. Cough is equally misleading. It may come from a disease of the larynx, or bronchi; it may also come from a disease of the ear or pharynx, the tonsils, pleura, heart, stomach, or lower abdominal organs. The pus or polyp observed on examination of the sinuses is a sign. From the symptoms and the signs the physician works up the complete picture of the disease, that is, the diagnosis.

The therapeutic renaissance to which I have referred includes an aggressive propaganda of education for teaching the medical profession and the public at large the proper use of drugs as therapeutic agents. The effect of this teaching upon the physician and layman, both of whom, unfortunately, are deficient at the present time, of knowledge concerning this important subject, is sure to materially influence the character of the demand for drugs. Mackenzie points out that medical treatment has always been in advance of knowledge, that treatment has been empiric, even experimental, and that knowledge has come later from the results of these unorganized attempts to palliate or cure the diseases of man, and he expresses the hope that eventually knowledge will precede treatment and that treatment will be based on knowledge, and not, as heretofore, largely on empiricism.

Mackenzie's hope is evidently to be realized in the not distant future. The American Therapeutic Society has taken up the subject in earnest, also the American Medical Association, the American College of Physicians and the American Association of Physicians and Surgeons. The new pharmaco-therapy will have the science of pharmacology as its foundation. And the physicians of the future will demand profound knowledge of that science upon the part of the pharmacists and manufacturers. If the pharmaceutical profession and manufacturers are found wanting the medical societies will find a way to meet the demand for proper pharmacologic service.

5. *Misapprehension of the Ethical Obligations of the Pharmacist to the Physician and the Public at Large.*—The pharmacist in accepting his license accepts with such license the obligation to practice his vocation in compliance with ethical requirements which are the same as those of medicine. There can be no two codes of ethics, one for medicine and one for pharmacy, because pharmacy is a branch of medical practice.

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[1] In 1909, The Metropolitan Life Insurance Company began a systematic campaign to lengthen the lives of its industrial policy holders. The report to Jan. 1, 1922, shows that to that date there were distributed 20,223,368 booklets and pamphlets, an average of more than 20 million annually. The improvement in industrial mortality in 1921, over 1911, gives a saving of 55,000 lives, which, measured in terms of dollars and cents, means a saving of $11,537,820 in death claims.

The medical profession, as you know, is a fraternity bound together by a code of ethics, the principles of which have been handed down from the time of Hippocrates—400 B. C. These principles are those of fraternity, altruism and beneficence. Obedience is necessary for the very existence of medicine as a profession. If the public at large ever loses confidence in the medical profession regarding obedience to these principles the profession is doomed.

The code of medical ethics obligates every physician to donate the results of his investigations and discoveries in the domain of medicine to the profession so that every physician the world over may have the opportunity of using it immediately in treating the sick. Monopoly of such discoveries is rightly considered an ethical crime against humanity. For the same reason the physician is under obligation to teach his fellow practitioners how to use these inventions and discoveries. In other words, he is not permitted to make a monopoly of them and introduce their use by misleading advertising so that he may acquire exclusive right to their manufacture and sale. It is evident, therefore, that there can be no coöperation between the medical professional and industrial institutions engaged in the introduction of alleged new remedies under a system of monopoly and misleading advertising.

Furthermore, it is necessary for the physician to know the exact truth regarding an alleged new remedy, which, of course, includes its untoward effects and limitations and comparative therapeutic value with other remedies, both new and old, recommended for the same purposes.

Before an alleged new remedy is placed on the market for sale its merits must be submitted to scientific tests and recorded and standards adopted to assure its identity, character, quality and strength, otherwise uniformity in action cannot be assured. It is for this reason, among others, that common standards, or pharmacopœias are necessary. Such standardization having been acquired, the next step in testing its merits consists of experimentation on healthy and diseased tissues to determine its pharmaco-dynamic and therapy-dynamic properties. These having been determined and also recorded the next step consists in submitting the alleged remedy to clinical test in hospital and private practice to obtain a therapeutic verdict.

Therapeutic verdicts can only be obtained as the products of many clinical researches carried on by competent observers and extending over long periods of time—researches conducted under conditions of environment which eliminate as far as possible the personal equation and errors due to differences in climate, race and social state.

It is evident, therefore, that the proper introduction of new therapeutic agents to science requires the entire educational machinery of medicine and pharmacy, including the laboratories and lecture rooms of the medical and pharmaceutical schools and colleges, medical and pharmaceutical societies and press, hospitals and other clinical institutions, and the medical and pharmaceutical professions at large. It is also evident that there can be no coöperation between the educational institutions and the commercial introducers of commercially controlled materia medica products without converting this educational machinery into a great advertising bureau for the teaching of error due to commercial exploitation. To what extent therapeutic nihilism is due to the exploitation of the educational

institutions already permitted to a certain extent is a question difficult to answer. Prominent physicians believe such exploitation to be one of the causes.

What is the remedy for this state of affairs? It is to be found in the abolition of monopoly, and the adoption of coöperation between the educational and industrial institutions related to the materia medica in the introduction of new materia medica *products* to science and *brands* of the same to commerce.

For example, condensed milk is a product. There are several brands of condensed milk on the market, as, for instance, the "Eagle" brand, "Anglo-Swiss" brand, "White Cross" brand, etc. Progress in the knowledge of condensed milk as a food is dependent upon the impartial discussion of the product by persons competent to discuss it, namely, dieticians and physicians. These discussions must be conducted under conditions which assure their impartiality. Experts in the employ of the condensed milk manufacturers are in position to place valuable evidence in favor of condensed milk as a food, and should be encouraged to do so, but they are advocates, not judges, not because of intent to mislead, but on account of very natural bias. They should, and doubtless would, work in coöperation with the experts employed by the industrial institutions, if permitted. But they could not do so under a system of monopoly and the subsidy of the medical and food journals by the monopolists. Take diphtheria antitoxin, as another example. It, too, has been introduced to science by experts working in the laboratories of educational institutions, consequently the knowledge of the product has developed properly along scientific lines. And the industrial producers have coöperated in promoting scientific knowledge by advertising their brands in the medical journals and by means of stock lectures, lantern slides, moving pictures, and working bulletins. And the experts employed by the producers have added much to scientific literature by their contributions to the professional societies and professional press.

6. Misapprehension of the Objects of the Copyright, Patent and Trade-Mark Laws.—In my last report as chairman of the Committee on Patents and Trademarks this misapprehension was treated at some length and as the subject is of so much importance to all concerned I will refer you to it rather than to encroach upon the limited time alloted to this Section. In this report, which appears on page 561, in the July number of the JOURNAL for 1922, you will note how the marvelous coöperation between educational and industrial institutions was obtained in Germany and how this coöperation had great influence in promoting the scientific and commercial prosperity of that nation before the great World War.

In this year's report of the Committee you will find reference to the action of the American Therapeutic Society in regard to the German method made possible by the patent system of that country which did not permit monopoly of medicines, foods, or chemical substances, but did permit the patenting of brands by process patents. And the German government further protected these industries from unfair competition by laws against misleading methods of advertising, and their strict enforcement.

You will also find in the report reference to the action of the American Therapeutic Society in regard to a system of protecting legitimate pharmacal and pharmaco-chemical industries engaged in research work and the commercial introduction

of new products resulting therefrom suggested by Mr. Milton Campbell, president of the H. K. Mulford Company, of Philadelphia, manufacturing and biological chemists.

7. *Mr. Campell's Plan for Coördination between Educational and Industrial Institutions for the Coöperative Introduction of New Materia Medica Products to Science and Brands of the Same to Commerce.*—Mr. Campbell's plan recognizes the importance of promoting progress in the science of pharmacology and the useful arts upon which that science is dependent by coördinate coöperative work by the educational and industrial institutions related to the materia medica supply business. It recognizes that investigations in many branches of science are necessary to develop knowledge of new medicinal drugs and chemicals, including vaccines, bacterins, serobacterins, antitoxins and immune serums, all being substances used in medicines and therefore coming under the classification "materia medica." Physics, chemistry, biology, botany, bacteriology, physiology, pathology, therapy, immunology, and other branches—all must be drawn upon to promote the science of materia medica, *i. e.*, the science of pharmacology. And all who are engaged in the development of this science must obtain a living directly or indirectly from materia medica commerce unless they are employed in the laboratories of educational institutions, or of the Government, or engaged in teaching.

Under the system of coördination and the introduction of new materia medica products to science, and brands of the same to commerce, advocated by Mr. Campbell, since there can be no monopoly, it is safe to open the doors of the educational institutions with their laboratories, hospitals, clinics and teaching staff to coöperative research and educational work on the part of the experts employed by the industrial institutions. There is no danger that by so doing the educational institutions will be converted into a great advertising bureau for the exploiting of commercially controlled products and the exploitation of the sick for commercial purposes, because no statements are allowable excepting those made by disinterested scientists and institutions.

Mr. Campbell's plan includes two license systems, namely, licenses annually granted to non-commercial institutions permitting them to manufacture and use patented materia medica products for educational and beneficent purposes, but not for sale, and annual licenses granted competitors engaged in the commercial introduction of such products on a royalty basis.

As the object of the plan is to promote progress in the science of pharmacology and the arts upon which that science is dependent by coöperation between the educational and industrial institutions related to the materia medica supply business, the licenses given either classes of institutions require the adoption of common standards and common nomenclature to fix the identity and determine the character, quality and strength of the licensed products; and no licenses are to be granted to industrial institutions except upon their agreeing to extend the same licensing privileges to others in regard to their own inventions and discoveries, and to comply in every respect with and accept in full the ethical policy founded by the plan.

Advantages of Mr. Campbell's Plan.—The great advantage of Mr. Campbell's plan is that it does away with monopoly and places the introduction of new materia medica products on a coöperative basis. The burden of expense attending the introduction is shared between the edu-

cational and industrial institutions; the artificial demand created by advocates of alleged new remedies is corrected by impartial discussions in medical societies and medical press. Brands are advertised in the advertising pages of the medical journals without endangering the integrity of the reading pages, and the more brands advertised the less the danger. These advantages may be summed up as follows:

1. It stimulates materia medica research and the publication of the results by donations to the professional societies and professional press, and thus increases the value of both as educational institutions.

2. The increased value of the medical journals as media for conveying knowledge concerning new products increases their circulation, and this, in turn, increases their value to the manufacturers of brands of the same as advertising media.

3. It stimulates competition between the manufacturers of brands to excel in quality of product. The license system insures common standards, yet quality of products made in accordance with common standards differs on account of differences in the skill of the producer.

4. The temptation to decry the merits of new products because of commercial rivalry is removed and desire to promote the investigation and use of such products is substituted for it because of the realizing sense that the introduction of each new product of therapeutic merit is profitable to all, as all are equally concerned.

5. It lifts the embargo on the medical press imposed by the monopoly system and permits the medical journals to impartially discuss the therapeutic claims for new products in their reading columns without fear of losing advertising patronage. For example, the advertising of brands of diphtheria antitoxin in the advertising columns of the medical journals has not hindered the impartial discussion of the therapeutic value of diphtheria antitoxin in the reading columns.

6. It permits medical scientists to enter the employ of the industrial institutions engaged in the pharmacal and pharmaco-chemical industries to do research work for monetary reward as well as scientific credit, thus encouraging them to chose research work as a vocation. Under the prevailing competitive system research work in commercial laboratories is discouraged.

7. It permits the medical and pharmaceutical schools and colleges to throw open their laboratories to research workers for solving problems of both scientific and commercial importance for the industrial institutions without danger of charges of collusion.

8. It places the faculties of the medical and pharmaceutical schools and colleges in position to teach their students knowledge relating to the more recent additions to the materia medica without the danger of unwittingly teaching errors due to commercial exploitation.

9. It creates a demand for departments in educational institutions for the teaching of pharmacologic science and the arts upon which that science is dependent to meet the requirements of the era of therapeutic renaissance now before us.

10. It creates a new and most promising field of work for the graduates of such institutions in the employ of industrial institutions carrying on their vocation in coöperation and coördination with the medical and pharmaceutical schools and colleges.

11. It places the pharmacal and pharmaco-chemical industries on a professional basis of such character that capital invested in research work may receive the protection afforded by the correct application of the patent and trademark laws without violating the ethical principles upon which the practice of medicine is founded.

12. And, finally, the plan is based upon sound business principles, is practical, is protective alike to educational and industrial institutions, protective to the medical and pharmaceutical press and its advertising patronage, and protective to the public health and general welfare.

COMMENTS AND CONCLUSIONS.

Now what has all this to do with my subject, "Pharmaco-Therapeutic Institutions?" It has much to do with it. An institution, according to the Standard Dictionary, is "that which is instituted or established; an established order, principle, law or usage; a system of laws or of polity, especially as an element of organized society or of civilization; as the *institution* of chivalry, the *institution* of slavery." Here we are dealing with the institutions of pharmacology and pharmaco-therapy.

Pharmacology is an institution, but separated from medicine it is a body without a soul. Pharmacy is an institution, but separated from pharmacology it ceases to be an institution and becomes a wreck. "What is the matter of pharmacy?" This question is not difficult to answer in the light of the above facts. What have we learned by considering these facts? We have learned that pharmacy and pharmaco-therapy are parts of the science of pharmacology. We have learned that students of pharmacy and of medicine must be coördinately educated in the science of pharmacology to enable them to practice in coördination and coöperation. We have learned that pharmacology and the pharmacologic arts are part of the science and practice of medicine, and, therefore, must be practiced in harmony with the code of medical ethics handed down from the time of Hippocrates. We have learned that the business of the pharmacist and manufacturing house engaged in the pharmacal or pharmaco-chemical industry is a professional business, not a commercial business in the sense that the term "commercial" is usually employed. We have learned that the "commercial" method of introducing alleged new remedies by misleading advertising is a menace to public health, whether the advertising is directed to the medical profession or the general public. We have learned that commercial monopoly of new materia medica products is inimical to the public welfare for it is a hindrance to the physician in the use of agents necessary to the prevention of disease, the relief of suffering, and the healing of the sick. We have learned that the embargo placed upon the medical press by the monopolistic system relating to the commercial introduction of therapeutic agents by advertising prevents impartial discussion of such agents by the medical journals, hinders the free diffusion of knowledge, and promotes the teaching of error. We have learned that the patent and trademark laws are being perverted to protect secrecy and monopoly owing to misapprehension of their meaning and misapplication by the Patent Office and the Courts. And, finally, we have learned that the practitioners of all medical arts are bound by the code of ethics, and also by the obligations accepted by them when they accepted their license to practice, to do those things which promote the public health, including coöperation and coördination in practice and teaching; therefore, it is the duty of all physicians and pharmacists to donate the results of their researches and experiences to the common good for the benefit of their profession and the public welfare.

The functions of pharmaco-therapeutic institutions are either educational or industrial, or both. The functions of the physician's office, the drug store, and the great manufacturing houses engaged in the materia medica supply business are both educational and industrial, and there should be coördination and coöperation between them in serving the medical profession and the general public with medicines and correct information concerning them. The fact that the boundaries of the fields of service overlap and can never be definitely defined has always caused friction between the practitioners of medicine and pharmacy. The remedy is to be found in education of both in pharmacologic science and arts in coördination by adopting a coördinate curriculum for the teaching of medical and pharmaceutical students and coördinate practice after graduation. The practice of medicine and pharmacy is seriously threatened with invasion by the practitioners of drugless cults, and the medical profession is asking coöperation on the part of pharmacists in repelling the invasion as a matter of protection of public health. This coöpera-

tion can never be brought about until the medical profession recognizes that pharmacy is an important part of medical practice, and physicians are willing to coöperate with pharmacists, and they with physicians, in pharmaco-therapeutic service.

The first step for the accomplishment of this desirable object must be the banishment of all systems of monopoly in pharmacologic practice, and the substitution of coöperation in place of competition in the introduction of new materia medica products, and the opening up of the educational institutions for the coordinate teaching of pharmacology to the medical and pharmaceutical students and practitioners of medicine and pharmacy. And it seems to me that the plan for the coördinate and coöperate introduction of materia medica products to science and brands of the same to commerce points out the way.

IMPROVED FORMULA FOR A TESTING INK FOR STERILIZERS AND AUTOCLAVES.*

BY IVOR GRIFFITH.

There have been placed upon the market several expedients for determining the reliability and accuracy of the numerous sterilization methods. Among the most popular of these articles might be named the tablets and powder tubes containing some mercuric compounds which have the power of radically changing color when the desired sterilization temperature has been reached. However, because of the expense of the available market articles, experimenters have attempted to work out some other method of obtaining the same results.

There recently appeared in a Hospital Journal a working formula for a so-called sterilizing ink. This ink was designed to be used in marking surgical dressings prior to their introduction to the sterilizing chamber, and the original color of the ink, which was red, would change, when sterilization temperature had been obtained, into a distinctly different color. Experimentation with this ink, however, proved it to be unsatisfactory in many respects. The so-called working formula refused to work, and the directions for compounding were entirely contrary to the usual practice.

Utilizing this formula as a working basis, the following recipe was conceived, and is perfectly capable of being transformed into a satisfactory article. There are advantages in compounding this ink in small quantities because of changes which occur when the ink is kept on hand too long. However, it has been our experience that ink in unopened bottles will keep unchanged for a long time, particularly if kept in amber-colored containers and away from the light. Formula:

Carmine	3 Gm.
Silver nitrate	30 Gm.
Potassium bitartrate	30 Gm.
Stronger ammonia water	120 cc
Simple syrup	15 cc
Mucilage of acacia	15 cc

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Cleveland meeting, 1922.

Working Directions.—Triturate the carmine with the stronger ammonia water until solution is effected. Add this to the silver nitrate, previously pulverized, and stir well. To this add the potassium bitartrate and again stir briskly. Next add the syrup which causes the mixture to become quite viscid. Finally add the mucilage of acacia, and the mixture is completely homogenized by thorough shaking. The result is a deep purplish red ink, which prints light red letters.

Method of Using.—Before the dressings are introduced into the sterilizer a piece of paper, upon which is written with the sterilizing ink the date of sterilization, is attached to the dressings. The sterilizing is conducted in the usual way. If sterilizing temperature (approximately 260° F.—20 pounds pressure) is attained, when the dressings are withdrawn the ink upon the paper which was originally red, will have changed to a black color, indicating the completion of proper sterilizing technique.

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FURTHER NOTES ON TINCTURE OF CANTHARIDES.*

BY F. W. NITARDY.

As the U. S. P. process for Tincture Cantharides, as well as the process referred to in my paper presented to this Section in 1919,[1] do not always yield satisfactory results, further experiments have been made on the extraction of cantharides with the view of finding a simple method and suitable menstruum which will yield uniform and satisfactory results.

This paper should be considered in connection with my two previous papers on this subject,[1] and is not intended as a final report, but is offered for the purpose of recording the experiments which have been made and the results obtained. These experiments seem to indicate that it will be possible to prepare a Tincture of Cantharides by a simple extraction process, *i. e.*, the ordinary cold percolation method, with a menstruum that may prove acceptable for this preparation.

It has been claimed that glacial acetic acid, chloroform and acetone are excellent solvents for cantharidin, to which the activity of this drug is ascribed. Two preliminary experiments were therefore made, as follows:

Experiment No. 1.—100 Gm. of Powdered Cantharides were moistened, macerated for two days, and then percolated to obtain 1000 cc of tincture, using a mixture of 1 vol. of glacial acetic acid and 9 vols. of alcohol as a menstruum.

Experiment No. 2.—100 Gm. of Powdered Cantharides were moistened, macerated and percolated with acetone until exhausted; the acetone was then distilled off and the residue dissolved in alcohol to make 1000 cc.

Both tinctures were tested for blistering power by application to the skin of the arm. The tincture obtained in Experiment No. 1 produced a blister; the tincture obtained in Experiment No. 2 reddened the skin, but produced no blister.

A lot of Powdered Cantharides (assaying 0.9975% total cantharidin) was then set aside for further experiments, which were carried out as follows:

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* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Cleveland meeting, 1922.

[1] JOUR. A. PH. A., 8, 1030, 1919, and 10, 705, 1921.

Experiment No. 3.—100 Gm. of drug were moistened with 100 cc of chloroform, macerated in a well-stoppered flask for twenty-four hours, and then percolated with alcohol to obtain 1000 cc of tincture.

Experiment No. 4.—100 Gm. of drug were moistened with 100 cc of a menstruum consisting of 1 vol. of chloroform and 9 vol. of alcohol, macerated in a well-stoppered flask for twenty-four hours, then packed in a percolator and percolated with the same menstruum until 1000 cc of tincture had been obtained.

Experiment No. 5.—100 Gm. of drug were moistened with 100 cc of glacial acetic acid, macerated in a well-stoppered flask for twenty-four hours, then packed in a percolator and percolated with alcohol to obtain 1000 cc of tincture.

Experiment No. 6.—100 Gm. of drug were moistened with 100 cc of a menstruum consisting of 1 vol. of glacial acetic acid and 9 vol. of alcohol, macerated in a well-stoppered flask for twenty-four hours, then packed in a percolator and percolated with the same menstruum until 1000 cc of tincture had been obtained.

Experiment No. 7.—100 Gm. of drug were moistened with a mixture consisting of 50 cc of glacial acetic acid and 50 cc of alcohol, macerated in a well-stoppered flask for twenty-four hours, then packed in a percolator and percolated with alcohol until 1000 cc of tincture had been obtained.

Experiment No. 8.—100 Gm. of drug were moistened with 100 cc of menstruum consisting of a mixture of 1 vol. of glacial acetic acid and 19 vol. of alcohol, macerated in a well-stoppered flask for twenty-four hours, and then packed in a percolator and percolated with more of the same menstruum until 1000 cc of tincture had been obtained.

Tinctures made with the use of glacial acetic acid are slightly darker than regular U. S. P. tincture obtained from the same drug, but lighter than those obtained with the use of chloroform.

All of these tinctures were tested for blistering power, after they had aged several months, by applying a drop of tincture which had previously been concentrated to about one-fourth of its volume, to the skin of the forearm. The tincture obtained from Experiments Nos. 4, 6, 7 and 8 produced good blisters. Tinctures obtained from Experiments Nos. 3 and 5 produced reddening of the skin. The latter two were tried again and a blister was obtained on the second trial.

The tinctures were also assayed, using the clear tincture after aging for three months. This procedure was followed as it was thought that some precipitation might possibly occur on standing, and it was desired to determine the strength after aging and clarification. No appreciable sediment, however, was noticeable in any of the tinctures, except No. 5, which showed a trace of sediment adhering to the bottom of the bottle.

It will be noted that tinctures in which glacial acetic acid was used as an aid to extraction assayed higher than those in which chloroform was used in the same manner. It will further be noted that the U. S. P. tincture gave the lowest assay of all.

As the drug that was used in all of the above experiments was from the same lot, the assay results indicate which menstruum is most likely to give the best results.

For purpose of comparison, a liter of tincture was produced from the same lot of drug by both the U. S. P. process and the process given in my paper of 1919. These were also tested for blistering action, as well as assayed, with results shown in the table.

TABULATION OF EXPERIMENTS.

Expt. No.	Drug moistened with	Drug extracted with	Final composition of tincture aside from drug extractive.	Blistering action.	Assay. 100 cc.
1	Glac. acet. acid 1 vol. Alcohol 9 vols.	Glac. acet. acid 1 vol. Alcohol 9 vols.	Glac. acet. acid 1 vol. Alcohol 9 vols.	†	Not assayed
2	Acetone	Acetone	Alcohol	§	Not assayed
3	Chloroform	Alcohol	Chloroform 1 vol. Alcohol 9 vols.	‡	0.046 Gm.
4	Chloroform 1 vol. Alcohol 9 vols.	Chloroform 1 vol. Alcohol 9 vols.	Chloroform 1 vol. Alcohol 9 vols.	†	0.0666 Gm.
5	Glac acet. acid	Alcohol	Glac. acet. acid 1 vol. Alcohol 9 vols.	‡	0.100 Gm.
6	Glac. acet. acid 1 vol. Alcohol 9 vols.	Glac. acet. acid 1 vol. Alcohol 9 vols.	Glac. acet. acid 1 vol. Alcohol 9 vols.	†	0.0895 Gm.
7	Glac. acet. acid 1 vol. Alcohol 1 vol.	Alcohol	Glac. acet. acid 1 vol. Alcohol 19 vols.	†	0.0780 Gm.
8	Glac. acet. acid 1 vol. Alcohol 19 vols.	Alcohol 19 vols. Glac. acet. acid 1 vol.	Glac. acet. acid 1 vol. Alcohol 19 vols.	†	0.090 Gm.
9	*	Alcohol	Alcohol	‡	0.0385 Gm.
10	**	Potass. hydroxide U. S. P. 0.68 Gm. Water 30.00 cc Alcohol 70.00 cc	Alcohol 7 vols. Water 3 vols.	§	0.0421 Gm.

* U. S. P. process (hot maceration for twenty-four hours, then percolate).

** Dr. Squibb's process (cold maceration for 1 week, then percolate).

† Blister on one application.

‡ Blister on second application.

§ No blister.

The results indicate that a tincture produced by extraction with alcohol with the aid of acetic acid may prove satisfactory if no objection can be raised against the presence of the acetic acid in the preparation and thereby solve the difficulties encountered in the past with the complete extraction of this drug.

It is my intention to have further experiments made for the purpose of determining the smallest amount of acetic acid that will prove satisfactory, as well as whether or not this method will yield uniform results, which is not the case with either of the U. S. P. IX or the alkaline extraction methods.

ABSTRACT OF DISCUSSION.

W. L. Scoville referred to his work on the same subject. (See *Proceedings A. Ph. A.*, 1910, p. 1115; JOUR. A. PH. A., Volume II, p. 18; Volume III, p. 631; Vol. VI, p. 798.) He agreed with Mr. Nitardy that acetic acid and alcohol gave the best results. He could not see the force of objections to acetic acid in Tincture of Cantharides.

It was voted that this paper be referred to Chairman George M. Beringer, of Sub-Committee No. 11, U. S. P. Revision Committee.

LABORATORIES OF
E. R. SQUIBB & SONS.

AQUEOUS AND ALCOHOLIC ELIXIRS VERSUS AROMATIC ELIXIRS.*

BY CLYDE M. SNOW AND BERNARD FANTUS.

Elixirs have come to mean in this day something entirely different from the powders and later most unpalatable liquid mixtures which answered to that name in the early days of pharmacy and medicine. Although the name is of most ancient origin, elixirs as we know them were not introduced into medicine until the '60s of the last century.

Simple elixir as an official preparation did not appear in our Pharmacopœia until the 1880 edition was issued. The Latin title was Elixir Aurantii. It was made after the following formula:

Oil of Orange	1 part
Cotton	2 parts
Sugar	100 parts
Alcohol, Water, of each a sufficient quantity to make	300 parts

The oil of orange was distributed over the cotton which was then placed in a percolator, and followed by the sugar. Onto this was poured a mixture of alcohol and water in the proportion of one part of alcohol to three parts of water. Percolation then proceeded until 300 parts of elixir were obtained. This formula prevailed for ten years.

In 1890 the title became Elixir Aromaticum and the formula was revised. Compound spirit of orange replaced oil of orange, deodorized alcohol was directed, syrup took the place of sugar and precipitated calcium phosphate was introduced as a clarifying agent. In the revision of 1900 purified talc replaced the precipitated calcium phosphate. Since that time there has been no change in the formula.

The fact that the formula has not been changed in more than twenty years might seem to indicate that the elixir is perfectly satisfactory.

It will be our endeavor to show that this is not the case. At the time that Simple Elixir was introduced, it was seized upon because of its pleasant flavor as a most desirable vehicle for exhibiting medicinal agents to the extent that a number of such preparations were of no therapeutic value whatever, because of the weak solvent properties of the elixir with relation to the specific medicament.

Many chemical salts are but slightly soluble in 25 per cent. alcohol and many alcohol-soluble agents are precipitated when mixed with liquids containing as much water as Aromatic Elixir. These conditions were looked upon as being remedied after the mixture had been filtered through purified talc. Of course the liquid was rendered clear and transparent but usually at the expense of the medicinal properties of the preparations.

Because of this restricted solvent action of Aromatic Elixir a serious condition is encountered. In a general way the average dose of the salts which enter the elixirs of the National Formulary is one gram. The salt is usually not sufficiently soluble in Aromatic Elixir so that the average dose may be contained in one teaspoonful of the elixir. In order then that the average dose of the salt may be administered it is necessary to give an increased volume of the elixirs. This complication makes the doses of the National Formulary elixirs range from one to four teaspoonfuls.

* Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., Cleveland meeting, 1922.

Here we have one of the most serious faults of the National Formulary as viewed by the physician, as witness the attack on the National Formulary elixirs by Dr. H. C. Wood, Jr. (JOUR. A. PH. A., 7, 344, 1918). Furthermore, four teaspoonfuls of the elixir introduce a considerable dose of alcohol which might be objectionable in some diseases, as, for instance, in nephritis.

If now the average doses of the several medicaments were contained in a teaspoonful of the elixirs, this untoward condition would at once be eliminated and, we believe, serve more largely to make the National Formulary elixirs popular with the physicians than would any other modification. Further, in view of the present legal situation aiming at the abolition of the use of alcoholic liquors for beverage purposes, it seems the duty of the Committee on National Formulary to employ the minimum quantity of alcohol for solvent and preservative purposes in any and all of its preparations. The formula for Aqueous Elixir proposed by us for inclusion in the National Formulary is:

Elixir Aquosum.

Compound Spirit of Orange	10	mils
Alcohol	50	mils
Syrup	375	mils
Glycerin	200	mils
Distilled water to make	1000	mils
Purified talc	15	Gm.

The use of this elixir would remedy the objectionable conditions above enumerated. All elixirs containing water-soluble salts would be prepared with a vehicle carrying 5 per cent., in place of 25 per cent. of alcohol; furthermore, there would be an actual improvement in the taste of these preparations, as alcohol accentuates the salty taste of the salines. By using the Aqueous Elixir for the elixirs containing the digestive ferments instead of the present Aromatic Elixir, they would be taken out of the class of "booze" preparations and their therapeutic action probably improved, as alcohol in considerable concentration is known to be inimical to the action of ferments, nor does the usefulness of the Aqueous Elixir end here. We hear the complaints of the pharmacists, that pharmaceutical manufacturers are able to sell them such preparations as Elixir of Potassium Bromide cheaper than it can be made in the retail store. An analysis of the manufacturers' product in some cases reveals the fact that, while it contains the required weight of potassium bromide, it does not contain the volume of alcohol it should were it made from Aromatic Elixir in accordance with the formula of the National Formulary. In other words, the manufacturer has come to recognize the fact that there is no need for the 25 per cent. of alcohol present in the Aromatic Elixir for solvent, preservative or therapeutic purposes in such elixirs. He, therefore, uses only sufficient alcohol to carry flavoring agents and this materially lessens the cost of production. In some twenty of the medicated elixirs of the present National Formulary, purified talc or other clarifying agent is used to filter out the portion of the medicament that is insoluble in Aromatic Elixir, thereby reducing the therapeutic activity of the preparation to an undeterminable degree. Furthermore, the activity of these for the exhibition of water-insoluble drugs is deficient, as no attempt is made to introduce an average dose in a teaspoonful of the elixirs.

By way of something tangible we have prepared a sample of Elixir of Buchu. In the first place, please note that the Pharmacopœia describes the average dose of

Fluidextract of Buchu as two mils, while the dose of the fluidextract as represented in the official elixir is only one-half mil when the entire amount of the fluidextract prescribed is present in the elixir. But note the very turbid mixture which results from mixing the fluidextract, alcohol and aromatic elixir of the now official formula. What the content of buchu will be in the elixir after the undissolved portion has been unceremoniously filtered out, is indeed problematical. For extractive preparations of this nature we propose the following Alcoholic Elixir for introduction into the National Formulary:

Elixir Alcoholicum.

Compound Spirit of Orange	5 mils
Benzosulphinide	3 Gm.
Glycerin	200 mils
Alcohol to make	1000 mils

There is at present no sweet vehicle official for the administration of medicament to patients suffering from diabetes. The proposed Alcoholic Elixir, sweetened as it is with saccharin, would supply this demand.

This is a sample of Elixir of Buchu prepared with the proposed Aqueous and Alcoholic Elixirs containing the present official volume of the fluidextract. It has not been filtered. We now present a sample of an elixir which seems to us the desirable one; it contains in each teaspoonful the pharmacopœial dose of the fluidextract. It has not been filtered.

Aside from their usefulness in preparing the elixirs of the National Formulary, the two elixirs may be used to good advantage at the dispensing counter. It is common practice to prescribe tinctures of aconite, belladonna, colchicum seed, digitalis, nux vomica, veratrum viride and others of considerable potency with Aromatic Elixir. As all of these tinctures are extracted with menstrua of alcoholic strength differing from the alcoholic content of Aromatic Elixir more or less precipitation takes place when they are mixed. To dispense a prescription of such potency with a precipitate is scarcely compatible with safety. With the two elixirs proposed by us the physician would be enabled to adjust the alcoholic content to correspond exactly with that of the respective medicament, making it possible and easy to dispense a perfectly clear prescription. They also make it possible to dispense a satisfactory mixture when a water-soluble and a water-insoluble agent are prescribed in the same mixture. We present here the plausible mixture of Sodium Bromide and Fluidextract of Cannabis with Aromatic Elixir. The first vial shows a mixture of the average dose of each of the medicaments in a teaspoonful of Aromatic Elixir. You will note that there is a marked separation of some of the active ingredients. This next vial shows the same quantity of the same constituents in Aqueous and Alcoholic Elixirs adjusted to make a presentable mixture.

Finally, for the administration of such water-insoluble drugs as terpin hydrate, the problem of making the elixir therapeutically active by introducing the average pharmacopœial dose in a teaspoonful would be easily solved. The present formula for Elixir of Terpin Hydrate contains only one grain per teaspoonful, while the proposed Alcoholic Elixir will readily carry four grains per teaspoonful, which is the average pharmacopœial dose.

With these tangible evidences of the varied usefulness of these elixirs we bespeak your coöperation in having them introduced into the new National Formulary.

ABSTRACT OF DISCUSSION.

Motion was made by Mr. Gray, conforming to the recommendations of the authors of the paper, to bring the formulas and purposes of the two elixirs discussed in the paper to the attention of the Committee on National Formulary. The motion was duly seconded.

Mr. Thos. D. Elhenie called attention to an elixir formula containing $6^1/_4\%$ alcohol, which he used in preparations dispensed for children.

Dr. Arno Viehoever inquired relative to the solvent action of a weak alcoholic elixir. Alcohol, he stated, was not largely used by the Chinese in medicines, but the volume of doses was larger in consequence, so as to bring sufficient active constituents into the preparations.

Chairman Griffith spoke along same lines.

Dr. Bernard Fantus, co-author, stated that the stronger alcoholic elixir is to be used in preparations requiring such solvent. He gave a history of the work presented by the paper.[1] The suggestion of iso-alcoholic elixirs was not accepted with very general approval—placing the responsibility of selecting the alcohol strength for the elixir on the pharmacist. The two elixir formulas were therefore offered, leaving the selection to the prescriber. The author stated that physicians were interested and the inclusion of a non-alcoholic elixir would be a decided step forward.

E. R. Selzer spoke in favor of an elixir of low alcoholic percentage for saline solutions.

B. E. Höckert contended that the elixirs of the National Formulary could be improved; there was no suitable basic elixir suitable for buchu and hyoscyamus containing salines. He had found Compound Tincture of Cardamom useful in preparations containing buchu, belladonna, digitalis, aconite, etc. He also favored saccharin in some elixirs.

R. W. Terry asked relative to the keeping qualities of preparations containing an aqueous elixir or one weak in alcohol. He did not question the keeping qualities of the elixir but of the elixir in which some substance had been dissolved.

He was answered by the authors in saying that prescriptions were rarely kept for a long time; consideration would have to be given to that, the same as with other dispensing problems.

The question was called for and the motion to refer the paper to the Committee on National Formulary carried.

UNIVERSITY OF ILLINOIS,
SCHOOL OF PHARMACY.

OUR ATTITUDE TOWARD EDUCATION.*

BY EDWARD SPEASE.

What is our attitude toward education? This is the question that I am asking myself these days and in this short paper it is the idea to set forth this attitude as nearly as it can be seen from the viewpoint of the writer.

First of all it will be necessary to ascertain just what we mean by education and if we make any distinction between the words "education" and "training." It is true that the modern dictionaries do not set a hard and fast dividing line between the two words but a quotation from Herbert Spencer seems to me to bring out what is meant by education. He says "To prepare us for complete living is the function which education has to discharge."

Webster says that "training is a department of education in which the chief element is exercise or practice for the purpose of imparting facility in any physical or mental operation." Thus it would seem that we might have two types of pharmacists if we will, an educated one and a trained one. It is true that the educated pharmacist might not be one expertly trained in certain operations and

[1] See also "Elixirs of the U. S. P. and N. F.," pp. 277–283, April JOUR. A. PH. A., 1921. Samples of the elixirs under discussion were exhibited by the authors.

* Read before Section on Education and Legislation, A. Ph. A., Cleveland meeting, 1922.

it is likewise true that we might have a trained pharmacist who does not possess a great deal of education.

We all have different viewpoints as to what education a pharmacist should have and all these different viewpoints are born of certain local conditions which surround the individual who is expressing his opinion. It is also true that some of us do not view the opinions of others of us with much degree of tolerance nor do we look beyond to see what begets the opinions that do not harmonize with our own.

My own attitude toward this question to-day is not to find fault with the individual who does not have the education he should have, but I take violent opposition to the person who feels his education is completed or that he has enough to satisfy the demands of his calling, in his opinion, and does not care for more. He likewise does not wish those who follow him to have more than he has.

Our experience in this state in securing educational standards for pharmacy is perhaps not far removed from what has been found in other states and what is still to be faced by some states. It is the aim of this paper to bring out some of these experiences, if possible, for the benefit of those who still have the journey of prerequisite laws ahead of them.

First of all there is the opinion of the pharmacist who has lived a life of usefulness without having progressed in schooling beyond the grammar grades or perhaps not that far. His opinion must be formed from his own experiences unless he has had more than the usual amount of natural ability and has made the attempt to give himself as much education as is possible by means of good reading and studying, without the aid of systematic instruction such as the schools try to set forth.

His opinion is apt to be "that we need only a certain amount of training and the memorizing of certain pharmaceutical tricks to make us competent to be set free as pharmacists." He is likewise inclined to be the person who has little optimism and who would not recommend to his son or to his neighbor's son that he take up pharmacy. This same type of person is also apt to bring out the old threadbare statement about the poor boy who cannot afford to get the education he should have for this calling. On the other hand, one of the most pleasing features about our fight for higher education for pharmacists in Ohio is the fact that some of our staunchest supporters in the cause have been men to whom the advantages of a broad education have been denied. To my mind this fact alone shows their progressiveness. Another fact worth recording is that those men who opposed our higher standards in the beginning now for the most part see why they were necessary and do not hesitate to say so. This result will be seen in other states as well. It is inevitable. The retail druggist is perfectly willing to be led by the schools, provided the schools show him a valid reason, and provided the school man gives him an opportunity to express his opinions and is willing to receive these opinions and give them their proper weight. The schools, however, must be leaders in this movement, and the question now is, have the schools been farsighted and have they been wise leaders?

Since becoming a member of the A. Ph. A. and a listener in the meetings of the faculties I have always been faced with the proposition that high standards were a consummation devoutly to be wished, but that they must not be hurried. That

old statement of "not yet, do not rush the prerequisite law and high school graduation requirement" is what I have heard for many years, and I have tried to see the reason why and the force of argument behind these statements. It has even been said that if standards were raised to high school graduation there would be no students of pharmacy. My own experience as a teacher would lead me to make the statement that, if high school graduation or even one year of college or more be the preliminary standard and four years of college for pharmacists be required by all states to-morrow, the only falling off in students would be those who should not be admitted to the ranks of pharmacy. It is true that there are and always will be certain special cases of young men who cannot meet requirements who would make good pharmacists, but, still, who can answer how much better they would be if they could secure the preliminary education required and possess it in addition to their natural ability.

It is further true, perhaps, that we have schools that could not exist if high standards prevail because such schools cater to the unfit and untrained and prey upon their ignorance. Such schools are a menace to society and to public health because they make the graduate feel that he himself is fit and the master of his profession.

The fact of course must be recognized that standards can be lifted beyond the reach of the average citizen and beyond all reason, and it is likewise true that it is a question just how far standards may be rightfully carried by statute. The way to decide how far to go is easy for pharmacy because the trail has been blazed ahead of us by medicine and dentistry and in some localities by the profession of law and about all we have to do is to follow. It is also an achievement to be an intelligent follower.

If a school or a school man is to take part in this discussion he will first have to purge himself of all financial connections and approach this subject in a broad way. If he is dependent upon the tuition received from students, then his attitude toward education will be that the standards which will bring him the greatest number of students, and hence the largest income, are the desirable standards to enforce and he will steadfastly set himself against raising standards above this point. If, on the other hand, he can face the thing entirely in an attitude of what is best for the future of pharmacy and the public welfare, then he has placed himself in a position where he can discuss the problem intelligently and arrive at opinions based upon sound judgment.

My own little experience and observation lead me to think that education in America is not self-supporting financially; that if reasonable tuition be charged it will not cover the cost of instruction. Especially is this true in the case of professional education. In our own school the tuition per year is $200 for each student, and the cost of the instruction is $400 for each student, and still we are not satisfied with what we are giving the students. We cannot approach this subject from the retail store angle, where overhead must be reduced to secure a profit, for our profit must be in terms of service rendered to the community by turning out educated men and women who are equipped to give proper service to the public.

It is not amiss to advance the thought that high-priced equipment and fine buildings and the time of professors who have spent years securing their education should not be utilized in the attempt to make pharmacists out of poor material.

Would any of you be willing to entrust the use of high-grade tools to a person who is not capable of recognizing their value, or would you let any boy drive your high-priced automobile unless you had ascertained his fitness to do so? Would you expect an aeroplane manufacturer to turn out a high-grade plane from knotty and cracked lumber? Is it not our desire to turn out competent pharmacists and, if so, then should we not select our material in the beginning?

We in Ohio believe it is kindness to a prospective student, as well as justice to him and to the public, to direct him into the channel into which he is best fitted to go. We do not encourage the unfit to come into the school of pharmacy, but we do encourage the fit who have technical shortages to make them up in the right way and prepare themselves to enter pharmacy upon the same basis as all others. It is possible to rob the world of an efficient garbage wagon driver and make a very poor pharmacist of him. The calling of pharmacy never has advanced nor ever can advance beyond the individuals who are in it. If a boy starts out to enter a profession and, after knocking at the doors of medicine and dentistry, is refused and pharmacy accepts him, then do not expect pharmacy to be on an equal plane nor be so recognized with these sister professions. A stream cannot rise higher than its source, and the sooner we recognize this fact and begin at the bottom the sooner we can succeed in receiving the recognition we think we ought to have.

It is nauseating to hear the things said about the medical profession by some of our pharmacists, when the one who says them is not competent to criticize and when things as severe may be said about us as well. Let us cease to cast reflections upon a sister profession because of special cases within it, and let us try to eliminate these special cases within our own ranks, and we will find our sister professions turning to us in a joint movement for the elimination of such cases in the ranks of all.

It was the hope of this convention committee that the program could be prepared so that the faculties could attend the board meetings and *vice versa*, but we were unable to get the coöperation we desired in this movement; and be it said to the credit of the boards that they, in a majority of cases, expressed themselves as heartily in favor of this plan. One thought was advanced that the boards would no longer meet at the time the faculties did if they were not given two days for meetings regardless of anyone else. This thought could not have been born from a desire to be of service to pharmacy. What is the purpose of the meetings of the boards and the faculties, is it solely for themselves as individuals or for pharmacy? A school or a board that exists for the benefit of the individual in it should be stamped out of existence. If it is total time that is needed, then let us start the meetings earlier or extend them, but let us have them arranged so that we can have free and full discussion of our problems with an ideal of better education for the pharmacist and hence better service to the public. I hope that the next convention committee will succeed in this arrangement.

If this little paper can aid some in suggesting to us to adopt the right attitude toward education, it will have done much. It is not intended to hurt or to harm, but it is intended to bring forcibly home to all of us that if pharmacy is to be a profession or even a successful business of a high order we must select the people who enter it and we must give them education that measures up to what people receive in other professions.

THE RELATION OF EDUCATION TO LEGISLATION.*

BY L. E. SAYRE.

When this Section on Education and Legislation was proposed and created many years ago the mental reaction of the writer toward such an intimate union of two such seemingly different subjects, or subjects of such different aims, was that his curiosity was aroused. Was not the combination unnatural, and was it not a strained and artificial relationship? But in time it has dawned upon him that the connection is quite harmonious and that their mutual coöperation should affect, or deal with the fundamentals of this section. Unfortunately, may it be said, education must seek for legislation and legislation *does* concern itself in some degree with education.

It is well known, perhaps, that from a very early period laws have been proposed not only to recognize educational attainments, but to induce and stimulate individuals to attain education by authorizing certain honorariums in the arts, sciences and other cultural refinements; this legal authorization being based on the theory that such attainments contribute toward progress in civilization. It is well known that in countries where proper legislation is withheld or withdrawn illiteracy becomes a threatening calamity. In pharmacy and medicine the state has recognized these callings and, following the historical precedent, has enacted laws, and, in a peculiar way, has protected those who through personal endeavor attain a certain status in these vocations.

It is not the writer's purpose to go into the history referred to, but rather to emphasize a phase not related to history, which is perhaps familiar to all.

Quite recently, and after this paper was partly written, a communication was received from our distinguished member, Dr. H. V. Arny, in which he commented upon the proposed reorganization of the Association. According to his scheme this section might be abolished, since the proposed House of Delegates will have to do with all matters of legislation, with certain plenary powers. This proposal, indicating the abolishment of this section, has changed somewhat the complexion of the present paper from that which the author had originally in mind. What I may say, somewhat indirectly, I hope will lead to a discussion of the proposition referred to, which I trust will have fair consideration.

What this section has had to do in the past—what its supporters have had in mind, at least—has been legislation bearing more or less directly upon education. It has been, in such matters, considered an advisory body rather than one clothed with power to act.

We have now, it seems to me, arrived at a period when we have unprecedented conditions to deal with and novel adjustments to be considered.

We need the support and advice of those entrusted with legislative power. An unprecedented attitude of mind toward education is needed if we may hope for progress in pharmacy, or if we may hope to maintain our proper relative position among allied professions, such as medicine. This will mean a stimulus, not merely by resolutions, but the latter well supported by legislation. The generation following us seems to be losing sight of the fact that pharmacy has a distinct place in the world of science and fails to grasp the idea of its real service to humanity.

* Read before Section on Education and Legislation, A. Ph. A., Cleveland meeting, 1922.

Our guild should, in every way possible, through legislation and education, endeavor to stem this tide of lowering our professional standard.

The Conference of Pharmaceutical Faculties has been slow to adopt the high school requirement. Last year, by legislative enactment, the Kansas legislature incorporated this requirement in the pharmacy law; members of the board of pharmacy, with a proper vision toward the future, were courageous enough to endorse this requirement in advance of the period set by the Conference. In that state candidates for registration must now have the high school degree. I am not so much concerned, as some seem to be, as to how pharmacy shall be labeled—whether a vocation, a business, a profession, or all three combined. What I am concerned about is that pharmacy shall take and keep its proper place in rendering the service for which the calling is responsible. This service varies as medicine and allied sciences progress. The service required is not the same as it was twenty years ago. How few can meet its present demands!

It would prolong this paper unduly to enumerate the many branches of study that medicine has added to its curriculum during the past twenty years.

How few of our students realize this advancement and what it means to pharmacy? Students are just beginning to realize the importance of bacteriology—a study that should have been added to the pharmacy curriculum years ago in order to keep a respectable pace with medicine. How few students of to-day have any notion of the importance of this subject? Is this lack of interest in it due to apathy or because we could see no money in it that it was not duly recognized? A little internal persuasive legislation within the association, perhaps, would have brought much sooner this subject in pharmacy courses to the status of a required study. In most of the colleges it is now only an optional one, and many there are who think that it does not connect up legitimately with pharmacy, yet the state which permits a professional title and a monopoly, so to speak, assumes that the pharmacist has certain knowledge of the compounds and preparations he dispenses—including these are the products of the bacteriologist; the state presupposes this intimate knowledge as belonging to his professional equipment, whether such knowledge is profitable or not, commercially. What has been said of bacteriology is equally true of pharmaco-dynamics. It would take too much of the valuable time of this body to elaborate on this point.

In his recent work—"The Story of Drugs," H. C. Fuller, well known to the profession, has given us a very instructive chapter on legislation. Unfortunately he confines himself principally to legislation relating to the Food and Drugs Law. He might have shown how these laws, so essential to public health, had been more or less intimately connected with pharmaceutical education. The United States Pharmacopœia—antedating these laws by scores of years—has been and is now a model upon which these laws and their regulations are based.

Anyone who reads pharmaceutical history aright will see how the building up of the U. S. P. standard has been peculiarly interwoven with education and legislation. If the author of the "Story of Drugs" should revise his interesting and instructive work it is to be hoped that he will add a chapter on legislation pertaining to education. I think he can also show that this section is not only worthy of maintenance, but that its abolishment would be a mistake. It stands for a continuous and persistent stimulus to education in pharmacy.

School of Pharmacy,
University of Kansas.

THE STANDARDIZATION OF SCHOOLS OF PHARMACY.*

BY WILLIAM B. DAY.

Standardization is the topic of the day. Standardization of drugs, chemicals and galenicals occupies the attention of the revision committees of the United States Pharmacopœia and National Formulary. Standards for state licensing examinations, drug store experience and educational qualifications are prominent in the deliberations of our affiliated organization, the National Association of Boards of Pharmacy. The American Conference of Pharmaceutical Faculties is discussing educational requirements, standards for admission to schools of pharmacy, standards for the courses given by these schools, standards for the equipment of the schools and even suggests standardizing the faculties themselves!

The American Pharmaceutical Association is vitally interested in all these matters but in none more than in the standardization of the schools of pharmacy, for this bears directly on the one thing that is of supreme importance to the A. Ph. A., namely, the development of pharmacy and the determination of its status as a profession.

Our schools of pharmacy are making progress—for which the A. C. P F. deserves much credit—but we are still far behind our allied professions of medicine and dentistry. Will pharmacists and the public support more rapid progress toward higher standards?

We hear much of the commercialization of pharmacy, and even a casual observer must note that conditions in pharmacy have changed greatly in the last decade. Such commercialization seems unavoidable—it appears also in other professions—but it does not necessitate a lowering of ideals, for the pharmacist of to-day remains primarily a pharmacist—his professional knowledge and skill fix his status in the estimation of his patrons, and since he has accepted the responsible duties of the pharmacist he is bound to discharge them faithfully.

With the change in the manner of conducting drug stores comes a change in the value of the experience gained therein—at least insofar as this "practical experience" is a qualification for the license to practice. Hence the need for schools of pharmacy to supply more comprehensive training and more extended laboratory courses. Yet, the education of the pharmacist and the development of pharmacy go hand in hand. Neither can make headway without the other.

For these reasons I venture to present to this Section rather than to the American Conference of Pharmaceutical Faculties this brief discussion of the standardization of colleges of pharmacy and to sound a warning against the establishing of standards that may hinder rather than promote the professional development of pharmacy.

Standards for schools of pharmacy are necessary, but they should be broad standards, capable of general application and, of course, only intended as a minimum upon which development along several lines may be based. Schools of pharmacy must develop according to their opportunities and their environment; they cannot all, like the victims of Procrustes, be made to fit the same bed. Important as the teaching work is, the activities of the school of pharmacy must not cease there.

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* Read before Section on Education and Legislation, A. Ph. A., Cleveland meeting, 1922.

Just as the objective of the pharmacist should be of service to his community, both as a pharmacist and a citizen, rather than the amassing of personal wealth, so the school of pharmacy should aim to be of service to the pharmacists and to the citizens of their city and state. The school should be a clearing house for pharmaceutical knowledge. Its library and its collections should be available to the pharmacists and the public. Its faculty should endeavor to help pharmacists with their problems and be able to take an active part in affairs. It should, in fact, be a center for things pharmaceutical.

Schools who train for leadership deserve our praise—honor to them! But intelligent followers are no less important than leaders. Unless the rank and file select their leaders wisely and support them effectively, good leadership is impossible.

Schools must prepare their students to be *pharmacists* rather than to prepare them "for pharmacy." This implies broadening the courses and giving them greater cultural value, and yet the young men and women who are graduated by the school and thereby stamped with its approval have the right to expect that they shall also be able to qualify for the practice of pharmacy by passing the state examination. This condition will continue so long as the examination given by the board of pharmacy is the standard whereby the qualification for practice is finally determined. It therefore becomes necessary for the schools to consider the nature and scope of these board examinations in shaping their courses.

Whatever standards are established for schools of pharmacy, their reputation will be fixed and their usefulness judged by their fruits—their alumni. So let us not bind them too closely by *material* standards, of buildings, of equipment, of libraries, important as these are, but let us also consider the use that is made of these advantages, the place which the school of pharmacy occupies in its community, the *esprit de corps* of its faculty and students, and the professional standing of its alumni.

UNIVERSITY OF ILLINOIS,
SCHOOL OF PHARMACY.

PHARMACEUTICAL EVENTS IN 1822.*

BY OTTO RAUBENHEIMER.

Following up my previous efforts, I herewith beg to present a continuation of "Pharmaceutical Events a Hundred Years Ago." Although my notes on this subject are quite voluminous, being a compilation of many years, great care has to be exercised to exclude any errors, which are quite common in historical accounts. Let us hope that this paper will help to arouse a little more interest in that much neglected subject, "History of Pharmacy." The arrangement of the paper is similar to that of last year.

I. GENERAL INTEREST.

Greek independence declared on January 27, 1822.

Mexico an empire.

A number of South American countries became independent of Spain.

Brazil separated from Portugal, in commemoration of which event a Brazilian International Centennial Exposition will be held at Rio Janeiro in September 1922.

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* Read before Section on Historical Pharmacy, A. Ph. A., Cleveland meeting, 1922.

Missouri was admitted as a new state.

Daniel Webster, Congressman from Massachusetts.

Gauze over windows and sleeping under nets was found to lessen the attacks of malaria.

The first steam engine in Germany is erected in the Berlin Porcelain Works.

Sir John Franklin, English explorer, completed his first Polar expedition (1819–1822).

On July 8, 1822, the English poet, Percy B. Shelley, was drowned off the coast of Italy. His body was found near the Royal Palace of Gombo, near Pisa, the birthplace of Galileo. Shelley's remains were cremated and his ashes buried in the same burial ground with John Keats, apothecary and poet, who died in 1821, near the pyramid of Caius Cestius in Rome.

Oldest recorded mortgage, still in existence, was given on June 8, 1822, by Isaac Ormsby to the trustees of the town of Camillus, Onondaga Co., N. Y., for the sum of $326.78.

The astronomical system of Nicolas Copernicus, published in 1542, is at last adopted by the church.

II. EVENTS, PHARMACEUTICAL AND CHEMICAL, ETC.

First illumination with gas in the United States in Boston, having been antedated by the one in Cornwall, England, in 1792.

Gay-Lussac arrives at a more precise view of a "compound radicle" as the result of his work on the cyanogen compound.

Berzelius studies the mineral waters of Carlsbad.

Bonastre works on resins.

Cod liver oil, for a long time used as a household remedy in northern Europe, was introduced into Germany by Hofrat Dr. Scherer in Stegen.

Apothecary General abolished in U. S. Army.

Alexander Marcet, of Guy's Hospital, London, investigates black urine.

Dr. Brayer of Constantinople sends specimens of Kousso to Paris.

John Herschel lays the foundation to spectrum analysis.

Thomas Skidmore of New York proposes that the oxyhydrogen blow pipe discovered by Hare should be used as a *submarine instrument of naval warfare*. For particulars see Edgar Fahs Smith, "The Life of Robert Hare," pp. 14 and 15.

Seringe communicates a description of *Aconitu ferox*, Nepal or Indian Aconite Root, to the Société de physique de Genève.

Colebrooke gives the Cocculus indicus shrub the botanical title *Anamirta paniculata*.

III. FOUNDATION OF UNIVERSITIES, COLLEGES, ASSOCIATIONS AND JOURNALS.

British Association for the Advancement of Science founded.

Gesellschaft deutscher Naturforscher und Ärzte was founded and its first Congress of naturalists and physicians—including pharmacists—was held September 18, 1822, in Leipzig. Its centennial was duly celebrated in the same city.

Württemburg Apotheker Verein.

Witwen Kasse in Hamburg was established, *i. e.*, an insurance for the benefit of widows of physicians, surgeons and pharmacists.

Hobart College was founded in Geneva, N. Y. The centennial was celebrated in June 1922.

Rudolph Brandes begins the publication of "Archiv des Apotheker Vereins in nördlichen Deutschland" which in 1835 was named "Archiv der Pharmazie," which is still in existence.

Annals of Philosophy and Philosophical Magazine united.

Prof. John D. Goodman edits the shortlived *Western Quarterly Reporter of Medical, Surgical and Natural Science* (1822–23), the first medical journal printed west of the Alleghanies.

IV. ESTABLISHMENT OF FIRMS AND PHARMACIES.

George D. Rosengarten and Charles Zeitler, as Rosengarten and Zeitler, began the manufacture of chemicals in St. John Street, Philadelphia. They were the first to manufacture the alkaloids of cinchona and opium in the United States. This is the forerunner of Powers-Weightman-Rosengarten Co.

V. EDUCATIONAL EVENTS.

Liebig goes to Paris to study under Gay-Lussac.

Heinrich Rose, the Berlin apotheker, becomes professor of chemistry.

Dalton is made a member of the Royal Society of London.

Dr. George B. Wood elected professor of chemistry at the Philadelphia College of Pharmacy.

The name "Philadelphia College of Apothecaries" was changed to the Philadelphia College of Pharmacy" and the institution was incorporated.

Oersted visits Germany.

Harvard Botanical Gardens placed in charge of the celebrated Thomas Nuttall.

Emil Maximilian Dingler, founder of the polytechnical journal which bears his name, begins his studies.

August Wiggers, later professor of pharmacognosy and author, completes a 5-year apprenticeship with Apotheker Cohli in Coppenbrügge.

F. Runge received the degree Ph.D. from the University of Berlin with his thesis, "De pigmento Indico."

Carl Christian Beinert, a student of Trommsdorff, passes his state examination.

James Hutchinson Stirling, Scottish philosopher, author and critic, studies medicine at Glasgow.

Louis Nicolas Vauquelin, French apothecary and chemist, is pensioned as professor of chemistry. He was director of the Ecole de Pharmacie from its foundation in 1803 until his death in 1829.

The chair of medical history at the Paris Faculty, which was abolished in 1808, was again occupied by Morceau de la Sarthe from 1818 to 1822.

Johann Klein appointed professor of practical obstetrics, University of Vienna.

The first Hebrew apprentice was employed in Austria, *i. e.*, Michael Perl, in Zaleszesyki, Galicia. Officially the Jews were not permitted to become pharmacists in Austria until 1860.

VI. INVENTIONS AND DISCOVERIES.

George Simon Serullas (1774–1832), military pharmacist who served in the Napoleonic wars, and later chief pharmacist at the military hospital Val de Grace, discovers iodoform.

The French apothecary, Antoine Germain Labarraque, prepares the bleaching fluid, which still bears his name, by saturating a cold aqueous solution of sodium carbonate with chlorine gas.

Gentianic Acid by Henry and Caventou.

Chinoidin by Buchholz, Jr.

Daphnin extracted from *Daphne mezereum* L. by Gmelin and Baer.

Itaconic acid and its isomers discovered by Lassaigne in heating citric acid.

Woehler investigates silver cyanate and isolates cyanic acid.

Liebig isolates fulminic acid and shows same to have same composition as cyanic acid.

Leopold Gmelin discovers the ferricyanides by the action of chlorine on ferrocyanides.

Döbereiner prepares formic acid artificially.

Racemic tartaric aid discovered.

Liebig constructs the combustion furnace.

Theory of heat by the French mathematician, Jean B. J. Baron de Fourier.

Flourens makes his classical experiments on pigeons.

Magendie demonstrates Bell's law of the spinal nerve roots.

James Jackson describes alcoholic neuritis.

Petrox and Robinet obtain from *canella alba* the so-called Canellin which later on Meyer and Von Reiche found to be mannite.

Trommsdorff extracts 33 per cent. of glucose from juniper berries.

Schiede discovers in Mexico *Smilax medica*, the plant which supplies the Vera Cruz sarsaparilla.

VII. BORN IN 1822.

a. Pharmacists.

Theodor Peckolt—German apotheker who became Court Pharmacist in Rio, Brazil, 1867.

Adolf Fr. L. Stricker—1871, assistant to Liebig.

Ernst Chr. A. Biltz—1903, Apotheker in Erfurt, Ph.D. h.c. Univ. Halle.

Wilhelm Danckwortt—1892, Apotheker in Magdeburg, member Revision Committee and director Apotheker Verein.

Ludwig Haiss—1893, founder of the Pharmacists' Benefit Association in Bavaria.

Heinrich Zeise—Apotheker and poet.

Joh. J. H. Spirgatis—1899, Apotheker and professor at Königsberg.

Edmond Robiquet—1860, son of Pierre R., one of the discoverers of codeine.

Callay—1896, pharmacist and botanist in Chesne (Ardennes), under whom Bourquelot served his second-year apprenticeship.

Gustave Chancel—1890, French pharmacist and professor of chemistry.

Theodore Heinrich Hermann von Heldreich, born in Dresden, March 3, 1822, studied under Dr. Candolle and became director of the botanical garden of the University of Athens.

Robartus Johannes Opwijrda, one of the most noted Dutch pharmacists, apotheker and professor of chemistry in Nymegen and founder of the well-known" Pharmaceutisch Weekblad," in 1864.

b. Chemists.

Louis Pasteur—1895. The Pasteur Centennial will be celebrated May 1, 1923, at the University of Strassburg, where he was professor.

Henry Deacon—1877, English chemist, student of Faraday at the Royal Institution.

Oliver Wolcott Gibbs—1908, one of the most eminent chemists in the United States. He was Rumford Professor in Harvard, and credit is due him for introducing into the United States the German conception of research as a means of chemical instruction.

John P. Norton—1852, one of the pioneer agricultural chemists in the United States.

John Addison Porter—1866, American chemist and writer.

Alex. Fisher Olmstead—1853, American chemist and writer.

c. Physicians.

Stephen Smith, Father New York City Health Department and founder American Public Health Association in 1871.

Karl Thiersch, professor of surgery University Leipzig, who introduced salicylic acid in place of phenol in surgery. Solution and powder still bear his name.

Jacob Moleschott—1893, German physiologist.

Adolf Kussmaul, Director of University Clinic in Strassburg.

Greensville Dowell—1881, American physician and writer.

Chas. C. P. Clark, American physician and author.

Phineas Jonathan Horwitz, American physician.

Chas. Henry Budd—1880, American physician.

John Campbell, American surgeon.

David Camden DeLeon—1872, American surgeon.

Robert Murray, American surgeon.

Silas Lawrence Loomis, American physician and author.

Morton Stille—1855, American physician and lecturer.

Horace Putnam Fornham, American physician and benefactor.

Christopher Johnson, American physician and artist.

John B. Lindsley, American physician and educator.

Edw. D. McDaniel, American physician and inventor.

Alex. S. McDill—1875, American physician and statesman.

William M. Mitchel, American physician.

Samuel S. Purple, American physician and author.

William Speer, American physician and missionary.

Winslow Hatch—1885, American physician.

Henry Sanborn, American physician and statesman.

Chas. H. Fisher—1888, American physician and public officer.

Ambrosis Gonzales del Valle, Cuban physician and scientist.

Fernando O. Y. Berea, Mexican physician and author.

Joseph Henry Wythe, English physician and clergyman.

d. Naturalists, and others.

Johann Gregor Mendel—1884, abbot of the Augustinian monastery at Brünn, Austria, who discovered the mathematical law governing the dominant and recessive character of hybrids in 1866. (In connection with this permit me to call attention to the excellent article "A Pilgrimage to Brünn," in *Am. J. Pharm.*, 87, 69–75, 1915.)

Sir Francis Galton—1911, a cousin of Darwin, an investigator of heredity.

Alfred Russel Wallace—1913, who independently arrived at the Darwinian Origin of Species.

Rudolf J. E. Clausius—1888, German physicist.
Wilhelm von Beetz, German physicist.
Rudolf Leuckart, German zoölogist.
Franz Ritter von Hauer, Austrian geologist.
John Strong Newberry—1892, American geologist.
John M. Safford, American geologist and writer.
Charles Girard, French naturalist and author in America.
Reuben Aldridge Guild, American librarian and author.
Thomas Conrad Porter—1901, American botanist.
George Vasey—1893, American botanist.
James Thomson—1892, Irish physicist.
Heinrich Schliemann—1890, German archaeologist. It is interesting to know that when he was 28 years old he became a citizen of the United States.
Matthew Arnold—1888, English poet and critic.
Ulysses Simpson Grant—1885, American general and 18th president of the United States.
Henry T. Durant—1881, founder of Wellesley College.

VIII. DIED IN 1822.

a. Pharmacists.

My records are blank as to the death of pharmacists in 1822.*

b. Chemists.

Claude Louis Berthollet, born 1748 in Savoy, since 1772 in Paris, was very active in different branches of chemistry, especially after his election to the French Academy in 1780.

Alexander Marcet, born 1770 in Geneva, Switzerland, professor of chemistry at Guy's Hospital, London, and discoverer of xanthine in 1817. It was his lectures in London that induced the great Berzelius in 1812 to abandon the old method of instruction and to adopt the method of experiments.

c. Physicians.

Valentin Haüy, born 1745, younger brother of the celebrated mineralogist. In 1785 he founded the Institut nationale des jeunes aveugles, where the blind were taught how to read.

Domenico Cotugno, born 1736, demonstrated albumen in the urine by boiling, in 1764, and discovered the cerebrospinal fluid in 1774.

Caleb Hillier Parry, born 1755, a highly esteemed practitioner of Bath, England.

Wright Post, born 1766, of Long Island, N. Y., was the first in America to ligate the femoral artery successfully.

Michael Lub, born 1759, American physician and statesman.
James Sykes, born 1761, American physician and statesman.
Sam. R. Trevett, born 1763, American surgeon.

d. Naturalists and others.

Sir William Herschel, born 1738 in Hanover, the son of a musician, became a great astronomer in England. Discovered the planet Uranius in 1780.

Abbé René Just. Haüy, born 1743, French mineralogist.
Abbé Cucurron, born 1742, French educator of deaf mutes.
William Dandridge Peck, born 1763, American naturalist.
Edw. D. Clarke, born 1769, English traveler and mineralogist.
Giovanni V. M. Fabroni, born 1752, Italian scientist.
Alexander Metcalf Fisher, born 1794, American educator.
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Isidore Auguste Comte, the metaphysical writer and founder of modern positive philosophy, publishes the first of his numerous works, "Plan of Scientific Work Necessary for Reorganizing Society."

Thomas de Quincy published his "Confessions of an Opium Eater."

c. Papers, Pamphlets and Theses.

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Leschenault de la Tour in Mém. du Musée d'Hist. nat. VIII publishes a paper on the production of cinnamon bark.

James S. Cutbush: "Formation of Cyanogen by the Action of Nitric Acid on Charcoal."

BROOKLYN, N. Y.
AUGUST, 1922.

COMMITTEES OF THE NATIONAL WHOLESALE DRUGGISTS' ASSOCIATION.

President Frank E. Bogart of the National Wholesale Druggists' Association has appointed the following as chairmen of the association's committees for the current year:

Credits and Collections, M. E. Sherman, Des Moines, Iowa; Committee on Drug Market, F. J. McDonough, New York City; Employers' Liability and Workmen's Compensation, H. D. Cowan, Buffalo, N. Y.; Fire Insurance, Carl F. G. Meyer, St. Louis, Mo.; Legislation, C. Mahlon Kline, Philadelphia; Local Associations, H. D. Faxon, Kansas City, Mo.; Membership, John W. Durr, Montgomery, Ala.; Memorials of Deceased Members, H. J. Schnell, New York; Paints, Oils, and Glass, George A. Chandler, Hartford, Conn.; Rates and Routes, Romaine Pierson, New York; Trade-Marks, William McKinney, New York; Transportation, W. W. Gibson, Buffalo, N. Y.; Salesmen and Selling Methods, William Ochse. San Antonio, Texas; Proprietary Goods, G. B. Moxley, Indianapolis, Ind.; Quality Medicinal Products, I. V. S. Hillier, New York; Uniform Accounting, Sewell D. Andrews, Minneapolis, Minn.; Prize Contest, L. J. Bertoli, Chicago; Metric Weights and Measures, Adolph W. Miller, Philadelphia. President Bogart has also named the following delegates:

To National Drug Trade Conference, C. Mahlon Kline, Philadelphia; Chas W. Whittlesley, New Haven, Conn.; A. H. Van Gorder, Cleveland, Ohio. Alternates, W. L. Crounse, Washington Representative, Washington, D. C.; F. E. Holliday, General Representative; G. Frank Baily, Baltimore, Md.

To the Chamber of Commerce of U. S. A., E. D. Taylor, National Councilor, Richmond, Va.; Walter V. Smith, Philadelphia; H. H. Robinson, Baltimore; A. J. Geer, Charleston, S. C.

THE BUSINESS SIDE OF PHARMACY

This department is devoted to the discussion of problems of business administration and commercial policies relating to the various branches of pharmacy.

CONDUCTED BY DR. ROBERT P. FISCHELIS.*

To many scientific pharmacists and particularly to some pharmaceutical educators, the term "Commercial Pharmacy" is distasteful. Their contention is that there is nothing commercial about pharmacy, *per se*, although admitting the necessity of selling non-pharmaceutical merchandise in the present-day drug store. What we have reference to in discussing topics under the heading of commercial pharmacy is really the business side of pharmacy and articles which have hitherto appeared from time to time under the heading "Department of Commercial Interests" will henceforth appear under "The Business Side of Pharmacy."

The address of Chairman Charles W. Holton, of the Section on Commercial Interests of the American Pharmaceutical Association, read at the Cleveland meeting and published in the December issue of this JOURNAL, is one of those straightforward, right-to-the-point documents which breathes exact knowledge of the conditions in the retail drug business with every sentence. If you have not read it you ought to, whether you are an educator or a scientific worker or a retail druggist.

So many of the complaints about the practice of pharmacy to-day are due to a lack of appreciation of the actual conditions which those who are engaged in various phases of pharmacy must meet. Every one in pharmacy must know what the conditions are and it is folly to close our eyes and imagine conditions are different. The wish that retail pharmacy might be more professional is often father to the expressed thought that it can and must be, even if such greater professionalism is to be legislated into existence.

Mr. Holton says: "That there is need for real pharmacy no one will deny. That the practice of real pharmacy exclusively in a retail store will provide a satisfactory living is to be doubted. But that a combination of real pharmacy and the sale of numerous articles not related to healing can be carried on in the same store is entirely possible. And the greater the specialization in the drug store into separate departments, conducted by competent individuals, the better service the public will receive in both of these branches."

Back of the change that has come over the retail drug business in recent years, there is something more powerful than the desire of individual pharmacists to seek new sources of financial gain. It is the demand of the public for pharmaceutical service *when needed* that has brought more drug stores. The amount of medicine dispensed, the number of prescriptions written and the general demand for home remedies may be no greater in proportion to the population than formerly but the population has been crowded into cities and towns so that districts which were formerly served adequately by one drug store now keep two or three stores busy. People want quick service to-day and do not care to go very far for it. A drug store cannot be close at hand to everybody if its income is derived solely from the sale of medicines or prescriptions. The public demands that it be close at hand. There-

* Dean, New Jersey College of Pharmacy.

fore the druggist must sell articles which are in greater demand than drugs to keep the business going while waiting for the occasions when pharmaceutical service is desired. There is nothing incompatible in this condition, nothing requiring separation of pharmacy into two types of stores and nothing requiring legislative supervision over professional pharmacy. It is a perfectly normal development and Mr. Holton rightly points out that: "As time goes on and the drug store becomes more and more specialized as to its drug, prescription, candy and soda departments, each presided over by the most skilled help, the service of the store to the physician and the public will improve still more and the pharmacist will be assured of a reasonable competence."

The fact that modern methods of large scale production of pharmaceuticals have made it unnecessary as well as often unprofitable for the retail druggist to do much manufacturing of his own, does not reduce the need for knowledge of the methods of production on his part. To the contrary, such knowledge is really more essential than ever in order that he may properly distinguish between good and poor quality products. The development of the drug business in recent years has naturally caused those who are interested in pharmaceutical laboratory work to gravitate to the manufacturing houses where splendid opportunities await them. Those who are interested in the retail drug business have their choice, after graduation and becoming licensed, to conduct strictly prescription and medical supply stores or what is to-day considered an average drug store. Public service demands the latter type of store for the reason already pointed out and the fact that even the most exclusive prescription stores find it necessary to sell many side-lines indicates the trend of things in retail pharmacy very clearly.

There is, however, one serious obligation which rests heavily upon the pharmacist in the new type of drug store and that is to maintain and develop the professional aspect of his establishment; to practice according to the same code of ethics in both the business and the professional departments and to live up to the slogan, "Your Druggist Is More than a Merchant," in the eyes of the public and the profession.

Professor Chittenden in his recent address on the work of Pasteur cited the fact that while this great investigator contributed splendid researches in the field of pure science, he also applied his scientific skill and attainments to certain industrial problems with great success. The significant thing about Pasteur's relations with industries and trades was that he never lowered science to the level of trade but always endeavored to exalt trade to the level of science.

The modern druggist will do well to emulate Pasteur in this for not only will he thus keep the professional flame alive, but it will also result in greater appreciation of his services on the part of the public and consequent increase in his business.

DAYTON DRUGGISTS' ASSOCIATION.

A. C. Erbaugh was elected president of the Dayton Druggists' Association at the December meeting; other officers are: I. M. Lebensburger, vice president; Otto Moosbrugger, secretary; H. A. Ireland, treasurer; J. Rupert Miller, manager of council for term of five years.

H. S. Noel addressed the January meeting on the subject "The Art of Merchandising for Profit." In this lecture various practices were pointed out as unprofitable, and a number of new points were considered, all tending to the betterment of the druggist, both as a professional as well as a business man.

THE DEPARTMENT OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES

[EDITOR'S NOTE.—Last year there was published in the Conference Section a number of articles by prominent educators which had to do with the equipment and use of a Pharmacy Library. One article was by Dr. H. V. Arny and was descriptive of the Library of the College of Pharmacy of the City of New York. In the present number of the JOURNAL the same author tells in a scholarly way the actual working of that library. If the same effort should be made in every institution teaching pharmacy, it would mean a new era for cultural and scientific pharmacy. The paper is very timely, following that of Doctor Kremers in last month's issue.

Since the World War, no one problem has aroused greater widespread interest in educational circles than the various mental tests which have been devised to test the intelligence of an individual. The practical value of such tests has been an object of study in the College of Pharmacy of the University of Michigan, where these tests have been used for a number of years. The Editor requested Professor W. J. McGill of the Michigan faculty to briefly describe the results obtained at that institution. They are presented herewith.

R. A. LYMAN, *Chairman and Conference Editor.*]

THE SERVICE FEATURES OF A COLLEGE OF PHARMACY LIBRARY.

BY H. V. ARNY.

During the past year, Chairman Lyman and Editor Eberle published in the A. Ph. A. Journal a paper written in 1914 about the library of the College of Pharmacy of which I have the honor of being librarian.

It is, therefore, unnecessary at this time to discuss the make-up of a good college of pharmacy library since that was the subject of the paper just mentioned. At this time I deem it a privilege to outline how a dead collection of books may become a living factor in the life not only of the college of pharmacy but also of all of those in the community who are interested in pharmaceutical subjects.

Those of us who have passed the half-century mark will recall some of the libraries of our boyhood when the books were apparently bought to be catalogued rather than to be used. I remember a certain library in a southern city where a chum and myself met our tutor for our German lesson, since it was such a quiet unfrequented place. We three sat at a table in one corner of the room and on the other side of the room at her desk sat the librarian, the relict of a much-beloved clergyman, chatting with some old friend as they did the "fancy work" in vogue in those days.

What a difference between this scene and the busy library of to-day with its corps of helpers more desirous of serving visitors than is the best salesman in a popular store.

In the same way, the college of pharmacy library of to-day should be a place where books are used rather than stored and with this thought in mind the following service features have been developed during the past decade.

INFORMATION BUREAU.

All of us pharmacy teachers have had the opportunity of helping our friends in the drug business by giving information on out-of-the-way subjects relating to pharmacy. This idea we have capitalized into a definite bureau which can best be outlined by the following clipping taken from our college announcement.

> The information bureau conducted by the library staff is designed to furnish pharmacists with data required in emergencies and not available in the library of

the average drug store. During the past years of operation the Bureau has met with gratifying success, and is steadily growing in popularity.

The following paragraphs explain the methods employed in conducting the service:

1. Telephone inquiries will be answered cheerfully without charge. Residents of greater New York or vicinity wishing to inquire about some pharmaceutical problem will ring up the Information Bureau, Columbus 0117, and will obtain information immediately, if same is accessible.

2. Non-residents will have their problems answered by mail if they enclose a self-addressed stamped envelope.

3. Problems requiring extended research will be handled for a fee as moderate as consistent with high-grade service.

4. Translations of articles from foreign languages, either in full or in abstract, as well as transcripts of papers appearing in English or American pharmaceutical, chemical or botanical periodicals will be prepared for those desiring to pay for such service.

5. As in the past, all visitors to the library, desiring to do their own research work, will be given courteous attention.

This proposition was a success from the start and scarcely a day passes without queries. Most of these can be easily answered but there is a small percentage that remain unsolved. An amazing variety of queries come in. Most of them relate to recipes for foreign preparations, a large number concern new remedies, an almost equal number concern botanicals and some inquire as to technical recipes. In the latter case, we have to use some *finesse* in differentiating between the honest querist whom we can serve without much cost to ourselves and those who wish to get information worth hundreds of dollars for the price of a postage stamp. Legal queries are frequent but since our library is primarily scientific such queries are usually referred to other sources. Of great interest is it to note the source of the queries in so large a city as New York. During the war, members of foreign war missions used to consult us, as well as the medical branches of our government. Of course, the retail druggists constitute the major part of the querists, but "our friends down town," the wholesalers, brokers and manufacturers, find our service of much value.

SUBJECT INDEX FILE.

Shortly after the information bureau was organized it became apparent that the technically trained man was not always at hand to answer queries and that it was highly advisable to arrange matters so that in emergencies, the assistant librarian trained in library practice but not in pharmacal sciences, could answer many routine questions. With this in view there was started in 1916 a subject index on pharmacy. We purchased an 8-drawer vertical unit cabinet (L. B. 8010) and had the folders numbered 1 to 1000. Then instead of starting a card index we took the index of my book on pharmacy (which comprises about 1000 pages) and pasted it in a loose-leafed index book a column on each page. (The book was shown when the paper was read—EDITOR.) In this way we had a ready-made index of fairly comprehensive scope with an abundance of space in which new annotations could be made in the proper alphabetical order. From the time the plan was started clippings, bibliographical references and other data have been filed in the appropriate folio; until now a rather respectable subject index has been established and to this the assistant librarian first turns when queries come in. Eventually, if the work is systematically continued the subject index file will be of the utmost value. This simple plan of filing has proved so useful and practical

that I feel that the idea should be passed along. Were I starting anew the only changes I would make would be to purchase originally a filing cabinet of 2000 folios and to use as its index, the index of one of the dispensatories as more comprehensive than my book. Of course in using this file, the page number in the index becomes the number of the folder in which the data concerning the subject are filed.

INDEX OF NEW REMEDIES.

New remedies with coined names are so numerous that these have to be treated as a separate subject. There are at present two comprehensive lists of new remedies in English that are published annually, the list which has been a feature of the Proceedings of the New York State Pharmaceutical Association for over 20 years and the list in the A. PH. A. YEAR BOOK, both of which have been prepared during the past five years by the same person. Either of these lists is cut into individual slips and each slip describing one coined name preparation, is pasted upon an ordinary index card and filed. In this way in our library card index of new remedies we now have several thousand descriptive cards and the list is growing at the rate of 500 to 600 a year. Whenever the query comes concerning a coined name preparation we first turn to our card index. Of course it would be a neater job to have our information typed upon the cards instead of carried on a pasted slip, but having no typist at the disposal of our library we find that we can keep our index up to date by the simple expedient of having one of our assistants spend a day or so each year pasting upon the index cards the slips cut from each annual list of new remedies.

COMMERCIAL BIBLIOGRAPHICAL WORK.

In the announcement of our library service given above it is to be noticed that we are prepared to do extended bibliographical work for an appropriate fee, this type of work being done with a rare degree of skill by our assistant librarian. This work, however, is rarely profitable as the rates charged by other bibliographical agencies are not in our opinion commensurate with the services that should be rendered. However, quite a number of interesting bibliographies have emanated from our library since this branch of service has been inaugurated. This suggests the possibility of coöperative work by colleges of pharmacy along these lines. Such bibliographical work is rarely confidential; if it must be confidential a quadruple fee should be charged. Since it is not confidential the same set should be available to future clients for the proper fee at the simple expense of a second typing. It might be well for the several libraries of the Conference to keep a list of available bibliographies on technical subjects and when requests come in to refer the prospective client to the person who has already prepared such a bibliography.

FACULTIES FOR PRIVATE BIBLIOGRAPHICAL WORK.

It is obvious that our library is available to all desiring to do bibliographical research on their own account and we have many persons using our library besides the members of our faculty. While we have no hard and fast rule on the subject we discourage the borrowing of books and journals, except by members of the faculty. This we do primarily because it has so frequently happened in the past that the very journal desired by a visitor would be the one that we had loaned out.

CULTURAL FEATURES.

There are so many phases of this topic that a complete paper could be written concerning the cultural possibilities of a college or pharmacy library. Foremost is the historic side consisting (*a*) of the collection of rare books on pharmacy, (*b*) of

the study of historic pharmacy. As to the first every college of pharmacy should secure all of the bibliographical treasures of pharmacy that it is possible to get. In our own library largely due to the efforts of Dr. Charles Rice when he was our librarian, we have a beautiful collection of medical and pharmaceutical works of the early days of printing. Some of these choice volumes are always on exhibit in a handsome show case in the library and others are preserved under lock and key. As to historical research, our assistant librarian, an accomplished classical scholar, has published a number of historical papers. But of course when we discuss this topic we intuitively think of the work of Dr. Kremers and his pupils as the best illustrations of the possibilities of historic pharmacy.

Then there is that interesting topic, "The Pharmacist in Literature," and our assistant librarian with the generous coöperation of one of our trustees is collecting for our shelves, those books in which the pharmacist is among the *dramatis personae*.

Then there are possibilities of pharmaceutical collections and exhibits. Some few years since, we had a very comprehensive exhibition of mortars arranged by our former treasurer, Dr. Horatio N. Fraser, an exhibition that was not only an artistic success but one that gave a dozen of the mortars exhibited a permanent home in our library. An exhibit of drug jars has been talked of but as such exhibitions mean much work and responsibility and as our modest library staff has its hands quite full already, the project has not been called into being.

Then there are possibilities as to collection of pharmaceutical tokens and medals, a fascinating subject upon which we have merely scratched; again by reason of lack of help. And after all, when a library goes very far into such lines it becomes a museum rather than a library.

INSTRUCTION IN PHARMACEUTICAL BIBLIOGRAPHY.

It is known to all of us who have gone through the experience that there is a vast difference between having a library to use and knowing how to use it. With the idea of training our students how to use our library in 1913 I began a simple course of this character by utilizing some 5 or 6 hours from a lecture course in showing our advanced students what our library held and how to use the material at hand. This course has developed from this simple beginning into a 32-hour course (one hour a week) in bibliographical practice. This is a regular course in our third-year syllabus and may be roughly divided into the following outline.

(*a*) Five hours of lectures on our library, its source books, its journals and its year books and encyclopedias and how to use these.

(*b*) Some five hours of practice in abstracting from known sources. That is, the student is given a blank sheet of paper bearing at the top the author, subject and page reference and is told to read the article and prepare an abstract.

(*c*) Some five hours are given to more intricate bibliographical work. That is, the student is told that a certain article by Blank was published in a certain journal between, let us say, 1880 and 1890. With this cue the student is to hunt up the article and prepare the abstract.

(*d*) Some ten hours are then given to real bibliographical research. Each student is requested to suggest a topic in which he or she is especially interested and is then started on the proper source books or general indices in search of papers bearing on the subject. To those who do not have a subject to suggest some special topic is assigned.

(*e*) The remainder of the 32 hours are employed as opportune hours scattered through the year for conferences when the progress of the work done up to that time is outlined to the entire class.

The response to this course on the part of the students has been extremely gratifying. In the first years there were some who thought the course was an opportunity for slacking; but a resolution of the faculty that the bibliography course was to be considered in the same light as a laboratory course brought a stop to such notions. In fact, now, most of those taking the course, of their own volition, devote quite a number of spare hours outside of the official library periods in their bibliographical work. Incidentally while rigid quotas are out of the question in a subject like bibliographical work, there is set each year a minimum of abstracts that must be handed in. Some of the work done has been of excellent character, as attested to by specimen abstracts submitted herewith. Particularly noteworthy have been some of the bibliographies prepared on special topics of the students' own choosing. During the past year, for example, one student studied the bibliography of casein plastics; another the production of citric acid from sugar by use of proper cryptogams; while another prepared an excellent summary of attempts to synthesize sucrose.

CONCLUSION.

The foregoing indicates that our library is a very busy place and that it yields our college ample dividends in the form of service rendered.

THE APPLICATION OF INTELLIGENCE TESTS IN THE COLLEGE OF PHARMACY, UNIVERSITY OF MICHIGAN.

BY WILLIAM JAMES McGILL.

The use of methods designed to determine the intelligence of an individual by a few short and simple tests has recently been the subject of much discussion. Such methods, variously termed mental tests, psychological tests, or intelligence tests, are now commonly employed in educational and industrial organizations for classifying the individual and determining, in the case of the educational institution, whether or not the student is able to take advantage of the opportunities offered him, and, in the case of the industry, what niche the worker is particularly fitted to occupy.

The indiscriminate and unintelligent application of such tests has been attacked in numerous magazine articles, one in particular having recently appeared in the *Century*. They have also been criticized by many psychologists, who decry the too enthusiastic claims of "intelligence" test advocates, some of whom seem to believe that it is quite possible to determine the resourcefulness and the general reaction of an individual to his surroundings or his opportunities by such methods. But it cannot be denied that these tests do give a certain amount of information, valuable chiefly as a confirmation of more direct observations upon the subject of the test.

All of us interested in teaching have been confronted at one time or another by the necessity, out of fairness to the individual himself, of determining whether a certain student is delinquent in his work because he is lazy, or because his living conditions or other outside influences make it impossible for him to study properly, or whether he is mentally incapable of doing the work required of him. One may be quite sure in which one of these three classes the delinquent student belongs, and yet would welcome additional evidence to support or contradict this opinion.

This is especially true in these days of large enrollments and consequent inability to get into personal touch with the student. It is for the purpose of furnishing this additional evidence that these tests are employed in the College of Pharmacy, of the University of Michigan.

When a student in this college fails to obtain passing grades in a fixed percentage of the total number of hours he has elected for the semester, he is automatically placed on the warned or probation lists, and, among other things, is required to report to the Department of Tests and Measurements of the university, which conducts the intelligence tests. The rating he receives on these tests is reported to the faculty of the college and is kept on record. In case any student fails to improve in his work after having been placed on probation, his case is considered by the faculty and the rating of the student on his intelligence test submitted as a part of his record. Should this rating support a general opinion on the part of the faculty that the student is mentally incapable of carrying on university work, there can be no dispute and the individual is asked to withdraw, as the kindest thing for him personally. If his record on the mental test indicates that he is average or better than average mentally, and this supports the general opinion of the faculty, it remains only to find out whether the student is lazy or is distracted by outside interests. It will be seen that the tests themselves cast more light on this latter point, and may help the disciplinary body to treat each particular case more justly than could otherwise be possible.

The intelligence tests proper are simple. The subject is given a questionnaire which he is to answer and which asks him to record such things as his rooming conditions, outside interests, amusements, preliminary education, and, among other things, his own explanation of his failure to do good work. Another part of the test consists in answering a number of questions on general subjects such as the average college student should be informed upon through outside reading. He is given a paper containing certain statements and requested to perform some definite operation depending upon whether a designated statement is or is not true. He is shown a number of articles and later required to identify them from memory. He is given some reading matter and at the end of a definite period asked to indicate how much of the text he has been able to cover in the allotted time, and later he is asked to outline the subject matter of what he has read. One of the favorite texts for this part of the test has been the treaty of the League of Nations. The rating is usually done on the basis of an average group. That is, the rating obtained by each individual is compared with the ratings which experience has shown would be obtained by each individual of a definite number picked at random. A rating of forty-five on the basis of a group of fifty would mean that the individual obtaining it would be placed sixth from the top in such a group and consequently shows a mentality above normal since the highest possible rating would be only fifty.

Although the usefulness and validity of such methods have been seriously questioned, there is no doubt in the minds of those using them of their value when employed in the manner described—not as a mere mechanical means for classifying whole groups of individuals, but to obtain information not easily gotten otherwise, and which will make possible a fairer treatment of the student who has not been able to keep up with his classmates.

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Bull. sci. pharmacol., 29 (Nov. 1922), 564

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Use of hydrated oxide of bismuth in syphilis
Compt. rend. soc. biol., 86 (1922), 815; through *Bull sci. pharmacol.*, 29 (Nov. 1922), 610

Grenet, H., *et al.*
Sodium derivative of trioxybismuthobenzoic acid as a remedy for syphilis

Bull. acad. med. (1922); through *Bull. sci. pharmacol.*, 29 (Nov. 1922), 613

Jeanselme, E., *et al.*

Value of amino-arseno-phenol in syphilis

Presse méd. (1922), 397; through *Bull. sci. pharmacol.*, 29 (Nov. 1922), 612

Minet, Jean, and Bulteau, H.

Note on sparteine as a cardiac remedy

J. des Praticiens (Sept. 9, 1922); through *Bull. sci. pharmacol.*, 29 (Nov. 1922), 228

Ravaut

New therapeutic use for Lugol's solution

J. des Practiciens (July 22, 1922); through *Bull. sci. pharmacol.*, 29 (Nov. 1922), 228

Rennie, P. M.

Emetine bismuthous iodide in the treatment of amoebiasis

Lancet, 2 (1922), 1374; through *Pharm. J.*, 110 (Jan. 6, 1923), 11

Sazerac, R., and Levaditi, C.

Action of metallic bismuth in syphilis

Compt. rend. soc. biol., 86 (1922), 817; through *Bull. sci. pharmacol.*, 29 (Nov. 1922), 610

Shönle, H. A., and Moment, A.

New hypnotics

J. Am. Chem. Soc., 45 (Jan. 1923), 243

Walker, George

Dosage of digitalis, strophanthus, squill and nux vomica

Pharm. J., 109 (Dec. 30, 1922), 607.

VEGETABLE AND ANIMAL DRUGS.

Anon

Active principle of chaparro

Prescriber (Dec. 1922), 412; through *Pharm. J.*, 109 (Dec. 16, 1922), 562

Aiyar, S. S.

Seeds of Bixa Orellana

J. Am. Pharm. Assoc., 11 (Dec. 1922), 999

Annett, H. E., and Bose, M. N.

Estimation of meconic acid in opium

Analyst, 47 (1922), 387; through *J. Chem. Soc.*, (Long), 122 (Nov. 1922), part 2, 791

Gadamer, J., and Schittny, R.

Cantharidin

Arch. Pharm., 260 (Dec. 1922), 172

Gadamer, J.

Cantharides and nitrogenous derivatives of cantharidin

Arch. Pharm., 260 (Dec. 1922), 199

Giuffrè, U.

Detection of extract of Atracylis gummifera in licorice

Giorn. chim. ind. appl., 4 (1922), 460; through *J. Soc. Chem. Ind.*, 41 (Dec. 30, 1922), 995A

Kofler, L.

Primula root

Pharm. Monatsh., 3 (1922), 87; through *Pharm. Zentralh.*, 63 (Nov. 23, 1922), 617

Mameli

Extraction and purification of active principles of digitalis

Giorn. chim. ind. appl., 4 (1922), 355-358; through *Pharm. J.*, 109 (Dec. 16, 1922), 562

Sammartino, U.

A new constituent of the thyroid

Biochem. Ztschr., 132 (1922), 293; through *Pharm. J.*, 109 (Dec. 30, 1922), 606

Scholz, A.

Absorptive power of decolorizing charcoal

Chem.-Ztg., 46 (1922), 652; through *Südd. Apoth.-Ztg.*, 62 (Oct. 31, 1922), 472

Van Itallie, L., and Steenhauer, A. J.

Chemical examination of the bark of Tiliacora acuminata, Miers

Pharm. Weekbl., 59 (Dec. 23, 1922), 1381

Winterstein, E., and Telecky, J.

Constitution of saffron

Ztschr. physiol. Chem., 120 (1922), 141; through *J. pharm. chim.*, 26 (Dec. 16, 1922), 458

Zörnig, H.

Comparative anatomical studies of drugs

Schweiz. Apoth.-Ztg., 49 (Dec. 7, 1922), 701

ALKALOIDS AND GLUCOSIDES.

Bouillot, J.

Phosphates of strychnine

J. pharm. et chim., 26 (Dec. 1922), 406

Dott, D. B.

Note on hydrastine

Pharm. J., 109 (Dec. 30, 1922), 607

François, M., and Blanc, L. J.

Preparation of crystalline iodomercurates of alkaloids

Compt. rend. acad. sci., 175 (1922), 168; through *Bull sci. pharmacol.*, 29 (Nov. 1922), 598

King, Harold, and Palmer, Albert D.

Stereochemical configuration of the cinchona alkaloids

J. Chem. Soc. (*Lond.*), 121 (Nov. 1922), 2577

Kofler, L.

Determination of saponins

Ztschr. Unters. Nahr.-Genussm., 43 (1922), 278; through *Chim. et Ind.*, 8 (Dec. 1922), 1219

Schoorl, N.

Titration of cinchona alkaloids and their salts

Rev. trav. chim. Pays-Bas, 41 (1922), 228; through *Chim. et Ind.*, 8 (Nov. 1922), 1014

Schulze, Heinrich

Lappaconitine

Arch. Pharm., 260 (Dec. 1922), 230

OILS, FATS AND WAXES.

Bauer, K. H., and Hardegg, R.
Perilla oil
J. Chem. Soc. (Lond.), 122 (Nov. 1922), part 1, 983

Baughman, Walter F., and Jamieson, George S.
Composition of soya bean oil
J. Am. Chem. Soc., 44 (Dec. 1922), 2947

Jamieson, George S., and Baughman, Walter F.
Composition of sunflower-seed oil
J. Am. Chem. Soc., 44 (Dec. 1922), 2952

Krantz, John C., Jr.
Estimation of gaduol in tasteless extracts of cod liver oil
J. Am. Pharm. Assoc., 11 (Dec. 1922), 1018

Pieraerts, J.
Oil of copal
Mat. grasses, 14 (1922), 6094; through *Chim. et Ind.*, 8 (Nov. 1922), 1068

Richmond, H. D., and England, E. H.
Sulphuric acid reaction for cod liver oil
Analyst, 47 (1922), 431; through *J. Chem. Soc. (Lond.)*, 122 (Nov. 1922), part 2, 792

Thomas, Arthur W., and Yu, Chai-Lan
Determination of fatty acids in peanut oil
J. Am. Chem. Soc., 45 (Jan. 1923), 113

Thomas, Arthur W., and Yu, Chai-Lan
Qualitative tests for rape and tung oils
J. Am. Chem. Soc., 45 (Jan. 1923), 129

Toyama, Y.
Composition of the fatty acids of rape oil
J. Chem. Ind. Japan, 25 (1922), 1044; through *J. Soc. Chem. Ind.*, 41 (Dec. 30, 1922), 988A

ESSENTIAL OILS.

Ajon, G.
Adulteration of oil of lemon
Giorn. chim. ind. appl., 4 (1922), 389; through *J. Soc. Chem. Ind.*, 41 (Dec. 15, 1922), 958A

Angelescu, E.
Oil of Origanum vulgare
Gazz. chim. ital., 52 (1922), 153; through *Chim. et Ind.*, 8 (Nov. 1922), 1062

Boyer, J.
Pine needle oil
Deutsch. Parfümerie-Ztg., 8 (1922), 45; through *Chim. et Ind.*, 8 (Nov. 1922), 1063

LaFace, F.
Essential oils from Calabrian plants
Riv. Ital. Ess. Prof., 4 (1922), 64; through *Chim. et Ind.*, 8 (Dec. 1922), 1289

Leone, P., and Angelescu, E.
Thymus striatus oil
Gazz. chim. ital., 52 (1922), 152; through *Chim. et Ind.*, 8 (Nov. 1922), 1062

Massera, V.
Cinnamomum glanduliferum oil
Riv. Ital. Ess. Prof., 4 (1922), 41; through *Chim. et Ind.*, 8 (Nov. 1922), 1063

Power, Frederick B., and Chesnut, Victor K.
Odorous constituents of apples
J. Am. Chem. Soc., 44 (Dec. 1922), 2938

Sanderson, Wm. J., and Jones, Wm. J.
Congelation of essential oils
J. Soc. Chem. Ind., 42 (Jan. 5, 1923), 1T

MISCELLANEOUS PLANT CONSTITUENTS.

Atkinson, Ethel, and Hazleton, Edith O.
Qualitative test for tannin
Biochem. J., 16 (1922), 516; through *J. Chem. Soc. Lond.*, 122 (Nov. 1922), part 2, 793

Favrel, G.
Critical study of a new volumetric method for the estimation of santonin in santonica
Bull. sci. pharmacol., 29 (Nov. 1922), 553

Ott, Edwin, and Eichler, Fritz
Natural and artificial pepper substances. II. Chavicine
J. Chem. Soc. (Lond.), 121 (Nov. 1922), part 1, 1026.

GENERAL AND PHYSICAL CHEMISTRY.

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Simple method of elementary analysis
J. Pharm. Soc. Japan (Nov. 1922), No. 489, 985.

Baker, H. B.
Raising the boiling point of liquids by drying
Chem.-Ztg., 46 (1922), 796; through *Südd. Apoth.-Ztg.*, 62 (Oct. 31, 1922), 471

Bonnier, M.
Estimation of alkali carbonates
Compt. rend., 175 (1922), 765; through *J. Soc. Chem. Ind.*, 41 (Dec. 30, 1922), 1000A

Bury, F. W.
Volumetric determination of phosphate in solution
J. Soc. Chem. Ind., 41 (Nov. 30, 1922), 352T

Gustavson, R. G., and Knudson, C. M.
Electrometric titration of iron
J. Am. Chem. Soc., 44 (Dec. 1922), 2756

Hickman, K. C. D., and Linstead, Reginald P.
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J. Chem. Soc. (Lond.), 121 (Nov. 1922), 2502

Jander, G., and Wendehorst, E.
The determination of aluminum
Ztschr. angew. Chem., 35 (1922), 244; through *Chim. et Ind.*, 8 (Dec. 1922), 1221

Jordan, C. B.
Teaching of qualitative analysis in colleges of pharmacy
J. Am. Pharm. Assoc., 11 (Dec. 1922), 1008

Joret, G.
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Ann. Falsif., 15 (1922), 354; through *J. Soc. Chem. Ind.*, 41 (Dec. 30, 1922), 1000A

Keyes, D. B.
Method in research
Ind. & Eng. Chem., 15 (Jan. 1923), 82

Kurtenacker, A., and Werner, F.
Estimation of bismuth as metal
Ztschr. anorg. Chem., 123 (1922), 166; through *J. Soc. Chem. Ind.*, 41 (Dec. 15, 1922), 963A

Lang, E.
New iodometric method for the determination of copper
Ztschr. anorg. Chem., 120 (1922), 181; through *Chim. et Ind.*, 8 (Nov. 1922), 1007

Lange, N. A., and Kline, Harry
Use of malic, maleic and fumaric acids in volumetric analysis
J. Am. Chem. Soc., 44 (1922), 2709

Lasausse, Ed.
Volumetric determination of copper and its application to the estimation of reducing sugars
J. pharm. et chim., 26 (Dec. 1922), 401

Lorenz, R., and Herz, W.
Relation of melting point to boiling point
J. Chem. Soc. (*Lond.*), 121 (Nov. 1922), part 2, 739

Losana, L.
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Giorn. Ind. Appl., 4 (1922), 464; through *J. Soc. Chem. Ind.*, 41 (Dec. 30, 1922), 1000A

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Boll. chim. Farm., 61 (1922), 417; through *J. Chem. Soc.* (*Lond.*), 122 (Nov. 1922), part 2, 779

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Electrometric assay methods for crude drugs
J. Am. Pharm. Assoc., 11 (Dec. 1922), 1003

Melvill, F. L.
Effect of iron on the iodine titration of arsenate
J. S. African Chem.-Inst., 5 (1922), 3; through *J. Chem. Soc.* (*Lond.*), 122 (Nov. 1922), part 2, 784

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New volumetric method for the estimation of copper
Ann. chim. anal. chim. appl., 4 (1922), 99; through *Bull. sci. pharmacol.* 29 (Nov. 1922), 603

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Ztschr. angew. Chem., 35 (1922), 549; through *J. Chem. Soc.* (*Lond.*), 122 (Nov. 1922), part 2, 785

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A new accelerator for the Kjeldahl method
Ann. chim. analyt., 4 (1922), 266; through *J. Chem. Soc.* (*Lond.*), 122 (Nov. 1922), part 2, 783

Van Aerde
Rapid determination of lead in solders
J. pharm. Belg., 4 (Dec. 17, 1922), 909

van Liempt, J. A. M.
Microchemical method for the identification of tungsten
Ztschr. anorg. Chem., 122 (1922), 236; through *J. Chem. Soc.* (*Lond.*), 122 (Nov. 1922), part 2, 787

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Determination of sodium and lithium
J. Am. Chem. Soc., 44 (Dec. 1922), 2816

Willard, H. H., and Fenwick, Florence
Electrometric titration of vanadium
J. Am. Pharm. Assoc., 45 (Jan. 1923), 84

INORGANIC CHEMICALS.

Anon
Barium sulphate for roentgen-ray work
J. Am. Pharm. Assoc., 11 (Dec. 1922), 1072

d'Aguiar, H. D.
Production of radium in America
Chem. Met. Eng., 25 (1921), 825; through *Chim. et Ind.*, 8 (Dec. 1922), 1275

Feigl, F.
Benzidine in the detection of phosphoric acid
Ztschr. anal. Chem., 61 (1922), 448; through *J. Soc. Chem. Ind.*, 41 (Dec. 15, 1922), 962A

Ferguson, J. B.
Melting and freezing point of sodium chloride
J. Phys. Chem., 26 (1922), 626; through *J. Soc. Chem. Ind.*, 41 (Dec. 30, 1922), 979A

Fester, G., and Brude, G.
Requirements of the German Pharmacopœia for potassium permanganate
Ztschr. angew. Chem., 35 (1922), 527; through *Pharm. Ztg.*, 67 (Dec. 20, 1922), 1085

Hubert, P.
Determination of potassium in potash salts
Bull. Soc. Ind. Mulhouse, 88 (1922), 500; through *J. Soc. Chem. Ind.*, 42 (Jan. 5, 1923), 12A

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Determination of phosphorus
Ind. & Eng. Chem., 15 (Jan. 1923), 44

Marckwald, W., and Helmholz, K.
Phosphorus
Ztschr. anorg. Chem., 124 (1922), 81; through *J. Soc. Chem. Ind.*, 41 (Dec. 15, 1922), 938A

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Monograph on potassium metantimonate
J. pharm. Belg., 4 (Dec. 17, 1922), 918

Schlesinger, H. I., Jackson, V. T., and Cordrey, E. E.
Studies on manganates and permanganates
Ind. & Eng. Chem., 15 (Jan. 1923), 53

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Estimation of boric acid
Ztschr. anal. Chem., 61 (1922), 378; through *J. Chem. Soc. Lond.*, 122 (Nov. 1922), part 2, 784

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Micro-estimation of phosphoric acid
Ark. Kem. Min. Geol., 8 (1922), 1; through *J. Soc. Chem. Ind.*, 41 (Dec. 15, 1922), 963A

Vaubel, W.
Gravimetric determination of nickel
Chem.-Ztg., 46 (1922), 978; through *J. Soc. Chem. Ind.*, 41 (Dec. 15, 1922), 9629

Webb, H. W., and Taylor, M.
Determination of nitrogen in nitric acid
J. Soc. Chem. Ind., 41 (Dec. 15, 1922), 362T

Weinland, R., and Stroh, R.
Constitution of basic lead salts
Ber. deutsch. chem. Gesellsch., 55 (1922), 2706; through *Südd. Apoth.-Ztg.*, 62 (Oct. 31, 1922), 472

ORGANIC CHEMICALS.

Auerbach, F., and Bödländer, E.
Iodometric determination of sugars
Ztschr. angew. Chem., 35 (1922), 631; through *J. Soc. Chem. Ind.*, 41 (Dec. 30, 1922), 991A

Bach, A., and Generosow, A.
Action of hydrogen peroxide on formaldehyde
Ber. deutsch. chem. Gesellsch., 55 (Nov. 1922), 3560

Bock, Walter
Barbituric acid
Ber. deutsch. chem. Gesellsch., 55 (Nov. 1922), 3400

Clavera, José M.
Melting point of commercial terpin
J. Chem. Soc. (Lond.), 121 (Nov. 1922), part 1, 1042

Danner, Philip S., and Hildebrand, Joel H.
Ionization of ethyl alcohol
J. Am. Chem. Soc., 44 (Dec. 1922), 2824

Delaby, R.
Review of methods for the production of alcohol from sulphite liquors
Bull. sci. pharmacol., 29 (Nov. 1922), 587

Denigès, G.
Identification of small quantities of cream of tartar by microchemical methods
Bull. soc. pharm. Bordeaux, 60 (1922), 169

Denigès, G.
Identification of benzonaphthol, salol, betol, cresalol and salophen by microchemical methods
Bull. soc. pharm. Bordeaux, 60 (1922), 163

Dickinson, Roscoe G., and Raymond, Albert L.
Crystal structure of hexamethylenetetramine
J. Am. Chem. Soc., 45 (Jan. 1923), 22

Fenger, Frederic
Characteristics of pepsin and rennin
J. Am. Chem. Soc., 45 (Jan. 1923), 251

Gori, G.
Properties and uses of carbon tetrachloride
Boll. chim. farm., 61 (Oct. 30, 1922), 641

Gros, Raoul
Oxidation methods for the determination of formaldehyde
J. pharm. et chim., 26 (Dec. 1922), 415

Kolthoff, I. M.
Assay of chloral hydrate
Pharm. Weekbl., 60 (Jan. 6, 1923), 2.

Kremers, Edward
Chemistry of heptane and its solution
J. Am. Pharm. Assoc., 11 (Dec. 1922), 995

Lehner, Friedrich
Test for pyridine
Chem.-Ztg., 46 (1922), 877; through *J. Chem. Soc. (Lond.)*, 122 (Nov. 1922), part 2, 795

Lewis, W. Lee
Recent developments in the organic chemistry of arsenic
Ind. & Eng. Chem., 15 (Jan. 1923), 17

Maltby, John G.
Optical rotations of the sugars. Part I. The aldohexoses and aldopentoses
J. Chem. Soc. (Lond.), 121 (Nov. 1922), 2608

Massera, V.
Italian camphor
Riv. Ital. Ess. Prof., 4 (1922), 63; through *Chim. et Ind.*, 8 (Dec. 1922), 1289

Moir, J.
Sensitive reaction of phenol
J. So. Africa. Chem. Inst., 5 (1922), 8; through *Chim. et Ind.*, 8 (Dec. 1922), 1219

Powick, W. C.
New test for acrolein
Ind. & Eng. Chem., 15 (Jan. 1923), 66

Schamelhout, A.
Monograph for thiosinamine
J. pharm. Belg., 4 (Dec. 24, 1922), 934

Schwarz, P.
Benzene in benzine
Chem.-Ztg., 46 (1922), No. 53; through *Boll. chim.-farm.*, 61 (Oct. 30, 1922), 649

CLINICAL AND DIAGNOSTIC METHODS.

Estève, J.
Simple and rapid technique for the determination of phenolsulphophthalein in urine

Bull. soc. pharm. Bordeaux, 60 (1922), 172

Galesescu and Constantinescu

Reaction of chloroform with syphilitic serum

Répert. pharm., 34 (Dec. 10, 1922), 353

Guyot, René

Disappearance of acetone from urine as a result of fermentation

Bull. soc. pharm. Bordeaux, 60 (1922), 184

Malgoyre, J.

Peptic power of gastric juice

Bull. soc. pharm. Bordeaux, 60 (1922), 175

Räding, Kurt

Comparative estimations of acetone in urine

Biochem. Ztschr., 130 (1922), 448; through *J. Chem. Soc.* (*Lond.*), 122 (Nov. 1922), part 2, 793

Riegler, Em.

Detection and estimation of acetylacetic acid in urine

Compt. rend. soc. biol., 87 (1922), 281; through *J. pharm. et chim.*, 26 (Dec. 1922), 430

Widmark, Eric M. P.

Estimation of ethyl alcohol in blood

Biochem. Ztschr., 131 (1922), 473; through *J. Chem. Soc.* (*Lond.*), 122 (Nov. 1922), part 2, 759

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter. To maintain its activity and representation each branch should see that at least three of its meetings during the year are reported in the JOURNAL.

CHICAGO.

The 131st meeting of the Chicago Branch of the American Pharmaceutical Association was held Friday evening, January 5,192 3, at the University of Illinois School of Pharmacy Building, Chicago. President Snow called the meeting to order at 8:15 P.M.

Reports from the Membership Committee: Wm. Gray, *Chairman;* Committee on Practice, I. A. Becker, *Chairman;* Committee on Medical Relations, Dr. Bernard Fantus, *Chairman;* and the Committee on Publicity, Samuel C. Henry, *Chairman*, were received. The report of the Secretary-Treasurer was also submitted and the report of the Committee on Nominations was received and accepted, and the nominees unanimously elected.

REPORT OF THE SECRETARY-TREASURER.

During the year 1922 the Branch has held 8 regular meetings, the 123d to the 130th, inclusive.

Hallberg and Oldberg, the leaders of pharmacy in Chicago two decades ago, founded the Chicago Branch in February 1906. Since its organization and under the inspiration of these two founders the Branch has offered to its members and the pharmacists of Chicago and vicinity a series of scientific and professional meetings. Is there any other pharmaceutical organization in America that can show a series of 130 meetings devoted to the furthering of the profession and scientific standing of pharmacists?

At the meetings of 1922 Dr. A. S. Burdick, President of the Abbott Alkaloidal Laboratories, Dr. David Klein of the Wilson Laboratories, Mr. A. E. Anderson, City Chemist of Moline, Ill., Mr. Frederick F. Ingram of Detroit, Secretary S. C. Henry of the N. A. R. D., Dr. Bernard Fantus, Dean W. B. Day and others have delivered addresses. The subjects have been largely scientific in nature, though one meeting was of a very practical character, namely, "The Drug Store Laboratory" and one of an educational character, "American Colleges of Pharmacy, the Greatest Asset of Professional Pharmacy."

The membership of the Branch January 2, 1922, was 362. To-day it is 446—a net gain during the year of 84.

FINANCIAL STATEMENT.

January 2, 1922	
Balance on hand	$67.72
Refund on slides	18.00
Branch dues	66.50
Commission for new members	79.00
	$231.22

Printing and postage	$81.06
Expense for dinners	24.30
Speakers	15.00
Photographs and slides	22.00
Miscellaneous	5.88
Balance	82.98
	$231.22

Respectfully submitted,

E. N. GATHERCOAL, *Secretary-Treasurer.*

REPORT OF THE MEMBERSHIP COMMITTEE.

During the year 1922, a total of 132 new members have been added to the Chicago Branch. Of these an even 100 were obtained by Dean W. B. Day and Professor Gathercoal from the Senior Class of 1921–22 and of 1922–23 at the University of Illinois School of Pharmacy; 29 came from personal solicitation by the Committee or by other members of the Branch and 3 moved into Chicago territory. A total of 48 members have been lost to the Branch during 1922, of which number only 31 have been lost to the Association through resignation or suspension, and 17 have moved from Chicago out of Branch territory. Therefore—the net gain to the Association from Chicago territory during 1922 is 101 members, but to the Branch, 84 members. The considerable number leaving Chicago is due to the fact that so many new members are received from the Senior Class at the College of Pharmacy. Those who resigned or were suspended joined the Association as indicated below:

Joined in	
1906 and resigned or suspended in 1922	1
1910 and resigned or suspended in 1922	1
1915 and resigned or suspended in 1922	1
1918 and resigned or suspended in 1922	4
1919 and resigned or suspended in 1922	7
1920 and resigned or suspended in 1922	15
1921 and resigned or suspended in 1922	2
	31

The membership total January 2, 1922, was 362 and the total January 2, 1923, is 446.

Respectfully submitted,

WM. GRAY, *Chairman.*

REPORT OF THE COMMITTEE ON NOMINATIONS.

The Committee on Nominations reported the following nominees:

Officers.

President	L. E. Warren.
First Vice-President	Otto H. Mentz.
Second Vice-President	R. A. Linke.
Third Vice-President	Miss J. Dyniewicz.
Council Member	Clyde M. Show.
Secretary-Treasurer	E. N. Gathercoal.

Committee Chairmen.

Membership,	Wm. Gray.
Legislation,	James H. Wells.
Practice,	I. A. Becker.
Medical Relations,	Dr. Bernard Fantus.
Publicity,	Samuel C. Henry.

A symposium on Kino, Gambir and Catechu was presented.

Dean W. B. Day was the first speaker; he discussed the history and botany of these drugs. He pointed out the origin of the name "Terra Japonica" which was applied to Catechu in the 17th century when the drug first became known in Europe. It was then imported from Japan and there was a dispute as to whether the drug was of mineral or vegetable origin. In the London Pharmacopœia of 1721 it was listed among the "Terrae medicamentosae." Catechu is an extract of the reddish black heartwood, cut in chips and boiled for about 12 hours; strained and evaporated with frequent and vigorous stirring, which improves the product. When of a syrupy consistency it is cooled somewhat and poured into clay molds or on leaves, mats, etc., previously dusted with cowdung ashes.

The first known account of Gambir was communicated to the Batavian Society of Arts and Sciences in 1780. Other descriptions, a little later, state that the drug is made chiefly at Malacca, that it is in the form of squares or little round cakes almost perfectly white and that the finer sorts are used for chewing with betel. The leaves and young shoots are boiled with water and the resulting decoction is evaporated to a syrupy consistency and cooled, and crystallization induced in the soft clayey mass by agitation. The crystalline mass is allowed to drain and then cut into small cubes, strips, plates or discs, and dried.

Kino is of many commercial varieties, derived from different plants, such as African Kino, Australian Kino, Jamaica Kino, and Bengal Kino, in addition to the official variety which is East Indian Kino. Kino is not an extract, but the juice of the three thickened by drying in the sun or artificially.

Professor Clark presented, informally, a discussion on the chemistry of tannins, pointing out that the term tannin and tannic acid were practically synonymous. Although the tannins differ in certain respects, as indicated by their color reactions, apparently, these differences are largely due to similar kinds of certain substances not in themselves necessary to the tannin action; this tannin action is

shown by the astringent effect and is presumably the same for all members of the group.

The paper by Professor E. N. Gathercoal on the pharmacognosy of these drugs concerned particularly their pharmacopœial descriptions, their solubilities, their deterioration upon aging and exposure, etc. The paper will be published.

Dr. Bernard Fantus, speaking on the therapeutics of the astringents in general and of these drugs in particular, stated: "Astringents cause—shrinking, pallor, dryness and lessened sensitiveness. Inflammations cause—swelling, redness, increased secretions and increased sensitiveness. Any protein precipitant is an astringent. To be therapeutically useful an astringent must act quickly to form a dense precipitate, otherwise it will act too slowly and become an irritant. Hardly any class of medicinal substances requires more discriminating use than this one. If astringents are used too early they do harm by occluding gland exits and embedding inflammatory areas. If too strong, they are harmful; but if too weak, they accomplish no good. They must be so employed as not to reinforce the inflammation.

"While tannic acid is perhaps the purest and strongest of the vegetable astringents yet a milder and more lasting astringent in which the tannin is admixed with inert material is oftentimes indicated. For this reason suppositories or ointments containing nutgall are frequently preferred to similar preparations containing tannic acid.

"Kino, Gambir and Catechu contain insoluble materials, perhaps colloidal in nature, that make their action slower but more prolonged, and when used to reach the intestinal tract seem to be especially useful. When tannic acid or substances containing tannic acid reach the stomach they tend to combine with protein substances in the stomach and to rapidly form insoluble protein tannates. The protein in these tannates, however, is later digested in the intestines and the tannin with the astringent powers, liberated. It is very doubtful, however, whether the astringents of this kind are equal to the artificially prepared protein tannates."

E. N. GATHERCOAL, *Secretary.*

PHILADELPHIA.

NOVEMBER MEETING.

The regular monthly meeting of the Philadelphia Branch, A. Ph. A., was held November 14th at the Philadelphia College of Pharmacy and Science.

The meeting was called to order by President Jenkins and the absence of Secretary Harrisson was noted. The president requested Mr. Quintus Hoch to act as secretary pro tem.

W. L. Cliffe was introduced as the speaker of the evening, his topic being "Legislation."

The speaker gave an interesting talk on the subject assigned him, summarizing past and present legislation, and stressing the importance of the pharmacist becoming acquainted with all the laws and regulations affecting his calling.

The discussion following was by Messrs. LaWall, Minehart, Osterlund, Hunsberger, Eberle and others.

Doctor Minehart moved and Professor LaWall seconded a motion that the secretary communicate with the secretary of New York Pharmacy Board and ascertain if possible the cost of operation under the act recently enacted by that state.

It was moved by Mr. Hunsberger and seconded by Dr. Minehart that the Philadelphia Branch of the American Pharmaceutical Association record its opposition to any state legislation which contemplates the disruption of the present system of examining applicants for registration under the Pharmacy Act of Pennsylvania.

This concluded the business of the evening. The Branch adjourned at 10 P.M. after thanking Mr. Cliffe for his talk of the evening.

QUINTUS HOCH, *Secretary pro tem.*

JANUARY MEETING.

The January meeting of the Philadelphia Branch, A. Ph. A., was held at the Philadelphia College of Pharmacy and Science, January 16th.

President Jenkins presided and announced that Mr. Eberle would present Dr. Caswell A. Mayo's notes and slides on the Colleges of Pharmacy of the United States, being those exhibited before the American Conference of Pharmaceutical Faculties, in Cleveland, with some additional views which have come to hand since the meeting.

The collection gave evidence of the work and time the author had given in preparing the slides. It was particularly gratifying to note the facilities of the various schools and the opportunities afforded the pharmacy students of the present day.

Mr. Eberle, who was formerly connected with Baylor University, was able to point out the places of interest connected with it. Dr. W. C. Braisted explained the proposed new buildings of the Philadelphia College of Pharmacy and Science.

The slides and lecture were appreciated by all present and the secretary was instructed to thank Dr. Mayo for his courtesy in sending them, and Messrs. Harrisson and Eberle were thanked by the Branch for their part in the evening's program.

Jos. W. E. Harrisson, *Secretary.*

UNIVERSITY OF NORTH CAROLINA.

Professor E. V. Howell, writing relative to the organization of an A. Ph. A. Branch for the students of the University of North Carolina, states that the organization was responsive to the requests of the students, who had contemplated the formation of a pharmaceutical society. The suggestion to form a local branch of the American Pharmaceutical Association came from Professor E. V. Kyser. The latter requested that numbers of the JOURNAL be sent for distribution among the students, and this request was complied with. The organization meeting was held November 14. The following officers were elected: *President,* A. L. Hogan; *Vice-Presidents,* Sam Sowell and H. R. Laidlaw; *Secretary-Treasurer,* Almond P. Westbrook. A group picture of the organizers appears in this issue of the JOURNAL.

MEETING OF NOVEMBER 18.

The University of North Carolina Local Branch of the American Pharmaceutical Association met in Davie Hall, November 18. The meeting was called to order by the president, who then appointed the following committees: Executive—*Chairman,* J. L. Alderman; J. H. Kirby; H. E. Rees. Program—*Chairman,* E. V. Kyser; H. R. Totten; A. P. Westbrook. Pharmaceutical Progress—*Chairman,* W. L. West; E. L. Reaves. Membership—*Chairman,* L. M. Lamm; Sam Sowell; A. C. Wallace.

Abstractors: Miss M. E. Smith and C. R. Whitehead.

A motion was made and passed that each member be assessed twenty-five cents to purchase a record book and cover miscellaneous incidental expenses.

Then followed a very interesting illustrated lecture by Mr. E. V. Kyser on "The Collection and Distillation of Essential Oils." The lecture was followed by a display of finished essential oils and their synthetic homologues.

We thank Dr. Edward Kremers, dean of the Department of Pharmacy of the University of Wisconsin, who lent us his collection of slides on essential oils for this meeting.

A. L. Hogan, *President,*
Almond P. Westbrook, *Secretary.*

COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 9.
(Abstract.)

WASHINGTON, D. C., January 29, 1923.

To the Members of the Council:

48. Changes in the By-Laws of the Scientific Section. Motion No. 14, approved.

49. Changes in the Budget for 1923. Motion No. 15, adopted.

50. Applicants 109 to 165 elected to active membership.

51. Resignation of Council Representative of the St. Louis Branch. Under date of December 26, 1922, Mr. J. M. Noble writes as follows:

"I have moved from St. Louis, Mo., to Jackson, Mich., so wish to resign as Council Member from the St. Louis Branch of the A. Ph. A."

52. (Motion No. 17.) Motion to hold the first annual conference of the Executive Committees of the A. Ph. A. and N. A. R. D. at Asheville (see Item 26). With further reference to the proposed conferences of the Executive Committees of the A. Ph. A. and N. A. R. D., Secretary Samuel C. Henry of the N. A. R. D. writes to Secretary Day, under date of January 5, 1923, as follows:

"With further reference to the proposed annual conferences of the executive committee of the American Pharmaceutical Association and the National Association of Retail Druggists, I am instructed to inform you that it will be entirely agreeable to the executive committee of the N. A. R. D. to have the first official conference of the two bodies at the time of the next annual meeting of the A. Ph. A. at Asheville, if such an arrangement would be most convenient and agreeable to the executive committee, of the A. Ph. A. In other words, we wish to leave with your committee the decision as to where the first official conference shall be held, at the same time assuring you that the decision of the A. Ph. A. committee, whatever it may be, will meet with the hearty approval of the executive committee of the N. A. R. D.

Trusting your committee will decide this question as best suits its own convenience and pleasure and awaiting your further advice in the matter, I am,"

In forwarding this communication, Secretary Day makes the following comment:

"Although practically the entire Executive Committee of the National Association of Retail Druggists attended the Cleveland convention yet, as you know, they came as members of the American Pharmaceutical Association rather than as representatives of the National Association of Retail Druggists. For this reason, I believe that we are justified in assuming that the conference held at Cleveland last year was not the first *official* conference under the resolutions adopted by the A. Ph. A. at Cleveland and subsequently by the N. A. R. D. at Detroit in which an official conference at the annual meeting of one of the two bodies alternating each year was provided.

"I am glad to infer that Secretary Henry shares in this view and has generously and courteously offered, in behalf of the Executive Committee of his Association, to hold the first official conference of the two executive committees at Asheville next year."

It is moved by S. L. Hilton, seconded by A. G. DuMez, that the first official conference of the executive committees of the A. Ph. A. and the N. A. R. D. be held as Asheville, N. C., during the week of September 3, 1923.

53. Status of Committee to represent pharmaceutical interests in the Division of Biology and Agriculture of the National Research Council (see Items 21 and 32). Under date of January 3, 1923, F. R. Lillie, chairman of the Division of Biology and Agriculture of the National Research Council, writes to Prof. Youngken as follows:

"At the meeting of the Executive Committee of the Division of Biology and Agriculture on December 16th the personnel of the committee on coöperation from the American Pharmaceutical Association was approved as submitted. Action on your request to constitute this a sub-committee on pharmaceutical botany and pharmacognosy was delayed pending further information. It has not been the custom in the Division to constitute committees of the Division from the committees on coöperation of the societies concerned for the reason that the purposes and functions of the two groups are necessarily different in certain respects. The Executive Committee felt, therefore, first that the recommendation for the appointment of a committee on pharmaceutical botany and pharmacognosy should be supported with argument inasmuch as the Division is now moving toward reduction of committees rather than increase of their number; and in the second place if such committee were approved the question of personnel should be studied as a separate matter from that of the committee on coöperation of the Pharmaceutical Association. I think it can be found that the committee on coöperation will be sufficient to establish all useful contacts for the time being."

54. Election of active members. No. 166, John H. Becker, 12 Ely St., Rochester, N. Y.; No. 167, Vincent Christina, 161 East 72nd St., New York City; No. 168, Harry A. Reynolds, 656 West 204th St., New York City; No. 169, Saul Blair Schwartz, 1052 N. Lawndale Ave., Chicago, Ill.; No. 170, Orendorff Peterson, Williamsburg, Iowa; No. 171, Carl McDonald Thompson, Tower City, No. Dak.; No. 172, Edwin Nelson Browne, Edina, Missouri; No. 173, Joe Demain, Macksville, Kans.; No. 174, Neil T. Chamberlin, 2000 Hillsboro Road, Cleveland, Ohio; No. 175, E. Samson, 150–152 Maiden Lane, New York City; No. 176, George E. Amidon, Granton, Wisc.; No. 177, P. W. Gullord, Greenwood, Wisc.; No. 178, Charles W. Wolf, Thorp, Wisc.; No. 179, Judson Newell Davids, 246 S. Prospect Street, Marion, Ohio; No. 180, Reuben Richard Sloan, 509 North 10th St., Richmond, Va.; No. 181, Charles Livesay, Augusta, Wisc.; No. 182, Franklin Benjamin Wing, Abbotsford, Wisc.; No. 183, Victor Clyde Michels, Springfield, Ill.; No. 184, Peres Alvin Dix, 534–15th St. North, Seattle, Wash.; No. 185, Sheldon Charles Meyers, 2002 14th Ave. South, Seattle, Wash.; No. 186, Iva Marie Gustafson, Louis Hall, Univ. of Washington; No. 187, Homer Orion Zumwalt, 5637 Brooklyn Ave., Seattle, Wash.; No. 188, Rachel Alice Welsh, 5035 19th Ave. N. E., Seattle, Wash.; No. 189, Arnold John Lehman, 223 Liberty Court Apts., Seattle, Wash.; No. 190, Marie Annette Hardinger, 214 Summit Ave. North, Seattle, Wash.; No. 191, Mildred T. Leonard, Pomeroy, Wash.; No. 192, Linus Jones, Western Reserve Univ., Cleveland, Ohio; No. 193, Howard M. Zirwes, 7205 Wentworth Ave., Chicago, Ill.; No. 194, I. Paul Griggs, 1431 Boulevard of the Allies, c/o College of Pharmacy, Pittsburgh, Pa.; No. 195, Helen Van Ness Pratt, 5221 12th Ave. N. E., Seattle, Wash.; No. 196,

Caty Josephine Braford, 4223 Eastern Ave., Seattle, Wash.; No. 197, Helen Lothian Arkley, 308 North J Street, Tacoma, Wash.; No. 198, Henry James Lawrence, 1818—4th St., West, Seattle, Wash.; No. 199, Edward E. Swanson, c/o Eli Lilly & Co., Indianapolis, Ind.

A. G. DuMez, *Secretary.*

COMMITTEE REPORTS

REPORT OF THE COMMITTEE ON PATENTS AND TRADEMARKS.*

BY F. E. STEWART, CHAIRMAN.

The special object of this report is to call attention to the proceedings of the American Therapeutic Society and the Pennsylvania Pharmaceutical Association working in coöperation with the chairman of your committee for correcting certain abuses of the patent and trademark laws and the effects of this abuse upon the practice of pharmacy and medicine.

The American Therapeutic Society was organized in 1900, during the meeting of the Pharmacopœial Convention at Washington, to promote progress in therapeutics and stem the rapidly growing therapeutic nihilism in regard to drugs as remedies for disease. Among the causes of this loss of faith in drugs it was discovered that the growth of surgical specialties is gradually forcing the teaching of therapeutics out of the medical schools and colleges. Accordingly, at the last annual meeting, May 1–2, 1922, held in Washington, the report of a committee outlining a typical curriculum for the restoration of therapeutic teaching was adopted for the use of these institutions. It was also found that the introduction of alleged new remedies by misleading advertising in the medical journals is an important factor in the loss of faith in drugs; also that the patent and trademark laws are misinterpreted and misapplied for the protection of this objectionable "new remedy" business. The following resolutions were adopted by the American Therapeutic Society to aid in correcting these abuses and approved by the Pennsylvania Pharmaceutical Association at its recent annual meeting held at Buena Vista Springs, June 20–22, 1922.

This report should be read in connection with a paper contributed to the Scientific Section entitled "Pharmaceutical Institutions," appearing on page 129 of this number of the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Preamble and Resolutions Adopted by the American Therapeutic Society, May 1, 1922.

WHEREAS, the exact therapeutic value of new and even old drugs cannot be demonstrated owing to (1) the variety of names under which they are marketed; (2) the variation in their character, quality and strength due to different processes of manufacture; (3) the opprobrium of publishing in medical journals laudatory articles advertising commercially controlled drugs; (4) the fact that medical journals are unwilling to publish articles repudiating the therapeutic value of drugs, the advertisements of which are carried by them in their advertising columns,

WHEREAS, the large majority of practitioners of medicine and surgery find it impossible to remember or to take time to write long chemical names of drugs which have short, easily remembered names claimed as trademarks by their manufacturers,

WHEREAS, the constant use of a commercial name by physicians in prescribing and pharmacists in ordering supplies creates unfair monopolies in the sale of such drugs, to the discouragement of other manufacturers of the same products under their chemical names and hence, by destroying competition, removes the incentive to excel in the production of preparations of superior quality, therefore be it

1. *Resolved*, that the American Therapeutic Society herewith records its complete disapproval of all methods now in vogue for obtaining monopolies in drugs, vaccines and serums by product patents and the registration of so-called commercial names as trademarks; be it also

2. *Resolved*, that the American Therapeutic Society herewith records its approval of, and that it will support, measures that aim toward the patenting of processes and apparatus for the manufacture of medicinal drugs, chemicals and preparations of the same when such products are in fact new and useful inventions, provided that a complete description of their chemical composition, method of preparation and standardization and tests for purity are made known in

* Presented at Cleveland meeting, A. Ph. A., 1922. Referred to the Committee on Research.

the application for patent in such clear and concise language that any chemical or pharmaceutical firm may manufacture and market said drugs; and

3. *Resolved*, that the American Therapeutic Society approves the patenting of new drugs under agreement whereby educational, research and eleëmosynary institutions are licensed by the patentees or their agents or assigns to produce such patented products without royalty; and be it

4. *Resolved*, that the American Therapeutic Society also approves measures whereby the owners of such patents shall license the production of such patented products to competing manufacturers on a royalty basis; and

5. *Resolved*, that the American Therapeutic Society urges the coöperation of the medical profession, pharmacists, pharmaceutical firms, manufacturers of drugs, and editors of medical and pharmaceutical journals toward the end of appointing committees with power to promote such legislation as is needed to abolish the obnoxious and unscientific production, marketing and medicinal use of drugs patented under the present laws; be it also

6. *Resolved*, that a copy of these resolutions be sent to the secretary of each national medical pharmaceutical association and to the *Journal of the American Medical Association*.

ISOTONIC SOLUTIONS.

The ordinary solutions used as eye-drops often cause much pain, even a 2 per cent. solution of cocaine hydrochloride being painful at first until the anesthetic effect is produced. This pain may be greatly reduced or entirely eliminated if the solutions are made isotonic with the tears, *i. e.*, equivalent in osmotic effect to a 1.4 per cent. solution of sodium chloride, which has a freezing point about −0.85° C. Where sodium chloride is incompatible, the isotonic equivalent of other salts should be used, *e. g.*, sodium sulphate with zinc sulphate and potassium nitrate with silver nitrate. The calculations necessary, using de Vries' isotonic coefficients, are shown in the following example:

To make a liter of 0.2 per cent solution of zinc sulphate (collyr. zinc. sulph. B. P. C.) isotonic with the tears:

Zinc sulphate (287.5) is to sodium chloride (58.5) as 2 is to 3.

Therefore 3×287.5 Gm. zinc sulphate $= 2 \times 58.5$ Gm. sodium chloride.

And 2 Gm. zinc sulphate $=$

$$\frac{2 \times 58.5 \text{ Gm. sodium chloride.}}{3 \times 287.5} = 0.27 \text{ Gm. sodium chloride.}$$

Therefore the equivalent of 14 (1.4 per cent. in 1000 cc) — 0.27 (*i. e.* 13.73) Gm. sodium chloride is required.

Sodium sulphate (322) is to sodium chloride (58.5) as 4 is to 3.

Therefore 4×58.5 Gm. sodium chloride $= 3 \times 322$ Gm. sodium sulphate.

And 13.73 Gm. sodium chloride

$$\frac{3 \times 322 \times 13.73 \text{ Gm. sodium sulphate}}{4 \times 58.5}$$

or 56.68 Gm. sodium sulphate.

Now, dissolve 2 Gm. of zinc sulphate and 56.68 Gm. of sodium sulphate in enough water to make a liter. A one per cent solution of cocaine hydrochloride is equivalent in osmotic effect to a 0.2 per cent solution of common salt; hence if one multiplies the percentage of the alkaloidal solution by 0.2 and subtracts the result from 1.4 the required percentage of sodium chloride is obtained. This method will be found approximately correct for other medicaments used in eye work, such as atropine, pilocarpine, protargol, etc. The pain caused by hypodermic injections and the very acute pain of intra-dermic injections is almost completely eliminated if the solutions are made up to the osmotic strength of a 0.9 per cent. solution of sodium chloride (freezing point, − 0.55° C.).—William A. Knight in *Chemist & Druggist*, January 13, p. 59.

PENNSYLVANIA IS PLANNING FOR A SINGLE HEAD FOR VARIOUS STATE BOARDS.

The main feature of a bill being prepared by Hon. Albert M. Johnston, legal adviser to the Department of Public Instruction, Pennsylvania, contemplates a general council to consist of one member each of the regular or old school of medicine, the homeopathic, eclectic, osteopathic, and of dentistry, pharmacy, veterinary medicine and the Board for Registration of Nurses.

Each of these divisions of the healing art has a separate board but no common governing head.

Under the proposed bill they will be made answerable to the Council of Education in the Department of Public Instruction.

Separate examining boards in each will be retained. The Council of Education will, however, pass ultimately on their findings.

Provision is to be made in the Johnston bill to have incorporated in it at any time cults which may hereafter be established, as well as chiropractic, neuropathy, etc.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: A. G. DUMEZ, *Chairman;* S. L. HILTON, H. M. WHELPLEY, R. A. LYMAN, W. L. SCOVILLE, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio.*

Collaborators: JULIUS A. KOCH, President, A. Ph. A.; CHARLES H. LAWALL, President, A. C. P. F.; EDWARD WALSDORF, President, N. A. B. P.; E. FULLERTON COOK, Chairman, U. S. P. Revision Committee; W. L. SCOVILLE, Chairman N. F. Revision Committee; S. L. HILTON, Chairman, Council A. Ph. A. The Chairmen of the Sections, A. Ph. A.: ARNO VIEHOEVER, CROSBY B. WASHBURNE, W. F. GIDLEY, WALTER M. CHASE, CLYDE L. EDDY; E. F. KELLY and WILLIAM B. DAY of the House of Delegates; A. G. DUMEZ, Secretary of the Council, the General Secretary, and the Reporter on the Progress of Pharmacy.

SYRUP OF MANGANOUS IODIDE.*

M. Guyot writes as follows:

"Manganese plays the rôle of conveyor of oxygen as does iron in supplying haemoglobin. It is a reconstructive in anemia. The soluble salts should be included in the therapeutic arsenal, preference being given to the iodide. In the series of metals, manganese is neighbor to iron. Its atomic weight is 55, that of iron is 56; like iron it is bivalent, tetravalent, hexavalent; their oxides and salts are isomorphous. These analogies are important.

"It is proposed to adopt the same strength for syrup of manganous iodide as that of syrup of ferrous iodide.

"The iodide as found in commerce will not answer. Some firms produce a white salt, others a red one. Besides, the salt is very hydroscopic, and must be kept in amber bottles, carefully ground and tightly stoppered, protected from sunlight. The white manganous iodide on exposure to air becomes rose colored, then a deep red, by oxidation; on this account it must be prepared extemporaneously in making the syrup.

"Theoretically, it requires to obtain 5 Gm. of manganous iodide, 0.88 Gm. of manganese and 4.10 Gm. of iodine, but it is necessary to use an excess of manganese in order to obtain the manganous salt, so we will take 2.50 Gm. to 3 Gm. of manganese in very fine powder. At first about 2 Gm. is placed in a flask with 10 cc of orange flower water, then the iodine is added in small portions, reaction taking place immediately, with rise of temperature, the liquid becomes green, then red. After cooling, the remainder of the manganese is added in portions, the liquid assuming a grayish tint, turning to rose. It is then rapidly filtered into 990 cc of simple syrup, to which 1 Gm. of tartaric acid has been previously added (as a preservative). The syrup thus prepared contains 5 Gm. of manganous iodide in 1000 cc and keeps well even in daylight without discoloration. If the manganous iodide solution is not filtered rapidly, or is allowed to stand in the flask, the color will become yellow, turning to bright red.

"For convenience, a glycerinated solution may be prepared by filtering the solution of 5 Gm. of manganous iodide into 30 or 50 cc of glycerin, and the product used in proper proportion with syrup as needed. The glycerinated solution keeps well, but if long exposed to light will turn yellow."

Bulletin de la Société de pharmacie de Bordeaux; through *Repertoire de pharmacie.* Translation by W. H. Gano.

SOURCE OF INSULIN.

As a result of the improved histologic technic introduced by Lane and Bensley and of the recent demonstration by Banting, Best, Collip, Macleod and Noble that an alcoholic extract of mammalian pancreas—known as insulin—profoundly lowers the percentage of blood sugar in normal rabbits, Macleod says, the whole question as to the significance of the islet tissue, and particularly whether it is the source of insulin, is reopened for investigation. There are two aspects to the problem, the one being to compare by modern histologic methods the exact cytologic structure of the islets in the mammalian and the *Elasmobranch* pancreas with that of the principal islets found by Rennie in the *Teleostei*, and the other, to study the effect of extracts prepared from these sources on the percentage of blood sugar in normal rabbits. In general, the plan of investigation has been to observe from time to time the amount of blood sugar in normal rabbits injected with extracts prepared from the following sources: (1) the pancreas of representative *Elasmobranchii* [*Squalus* (dog

fish) and *Raja* (skate)]; (2) the principal islets of representative *Teleostei* [*Myoxocephalus* (sculpin) and *Lophius* (anglerfish)], and (3) the zymogenous (acinar) pancreatic tissue, as free as possible from islets, in the same and certain other *Teleostei*. Potent insulin preparations were readily made from the pancreas of the cartilaginous fishes—the dog fish (*Squalus acanthias*) and the skate (*Raja*). Still more so was this the case with the principal islets of Rennie, which are found in many bony fishes, the Angler (*Lophius*) and the sculpin (*Myoxocephalus*). Since these are readily available fishes, they may serve as a practical source of insulin. No insulin could be prepared from the pancreatic tissue proper (zymogenous or acinar) of the representative bony fishes (*Lophius myoxocephalus* and *Zoarces*). Although the anatomic relationships of these tissues are still somewhat obscure, these results, in Macleod's opinion, afford strong direct evidence for the hypothesis that insulin, as its name implies, is derived from the insular and not the zymogenous tissue of the pancreas.—From *Journal A. M. A.*, January 27, p. 278.

THE STRUCTURE OF FUCOSE.

ATTACKING DISEASE WITH SEAWEED.

In diagnosing many of the pernicious diseases, such as typhoid fever and pneumonia, the method employed by the bacteriologist involves a study of the way the germs grow upon media containing certain of the so-called rare sugars. There are at the present time some twenty of these rare sugars which are available for such use. A new member of this group of organic substances has been added to the list by the working out of a method whereby fucose may be made with relative economy from ordinary seaweed known as fucus, or commonly called rockweed.

This method is described in Scientific Paper No. 459 of the Bureau of Standards, entitled "The Structure of Fucose," which can be purchased from the Superintendent of Documents, Government Printing Office, Washington D. C., at 5 cents a copy.

This sugar is not entirely new, yet because of the difficulty of making it by the older procedures, as well as its excessive cost, it was unobtainable. Now that it can be made cheaply and easily, the bacteriologists will have another means for hunting out the germs that cause disease, thus enabling the physician to at once administer the proper treatment and so minimize the effect of the disease.

RESEARCH ON EDIBLE GELATIN.

The Edible Gelatin Manufacturers of America, Incorporated, announce the establishment of an Industrial Fellowship in the Mellon Institute of Industrial Research of the University of Pittsburgh, for the purpose of ascertaining the real food value of edible gelatin in its manifold applications in the American dietary.

The founding of this Fellowship is the outgrowth of the desire of the members of the Association to uphold high standards in the manufacture of this food and to have available for their own use and for the trade data of scientific and technical nature respecting its advantageous use in the food industries.

In addition to experimental investigations, a correlation of all available facts regarding edible gelatin will be made, to be held at the disposal of all users and prospective users of the product. It is hoped that real service may be rendered by supplying scientific data and technical advice.

The present incumbent of the Industrial Fellowship is Dr. Thomas B. Downey, who will be glad to furnish any available information to those interested in the uses of edible gelatin.

GERMANIUM IN THE TREATMENT OF ANEMIA.

Dr. John H. Mueller spoke on Germanium at the December meeting of the Philadelphia branch of the American Chemical Society.

The results of the clinical application of Germanium in the Philadelphia General Hospital by Dr. Solomon Solis-Cohen were discussed in a letter from him to Dr. Meeker and read by Dr. Meeker. In the case of anemia caused by loss of blood and in ordinary secondary anemia Germanium was beneficial and could not be replaced; while in cases of pernicious anemia it gave but a temporary relief and resulted in a quicker exhaustion of the power of the bone marrow to produce red corpuscles. It would give a shorter but more efficient and better life to the patient. The possible use of Germanium in the diagnosis of cancer was pointed out by Dr. Cohen in this letter.

After reporting on the investigations of the physiological effects of Germanium carried out at the Wistar Institute of Anatomy in cooperation with Dr. Abbott and Miss Iszard, Dr. Mueller spoke of the detection of Germanium—0.06 milligram can be detected by

the Marsh test; the Ge mirror differs from that of As in being red when viewed by transmitted light. The best quantitative method is by precipitation with Mg mixture, which precipitate is white and unaltered by ignition. The sulphide method is unsatisfactory because of the difficulty of the oxidation of the sulphide with nitric acid.

PERSONAL AND NEWS ITEMS.

Prof. Ivor Griffith, of the Stetson Hospital, Philadelphia, delivered an address on "One Drop of Blood," under the auspices of the Brooklyn Institute of Arts and Sciences at the Brooklyn Academy of Music, January 6. The speaker was chairman of the Section on Practical Pharmacy and Dispensing, A. Ph. A., from 1920–1922.

Miss Clarissa M. Roehr, secretary, San Francisco Branch, A. Ph. A., apothecary at University Hospital, is president of the Women's Pharmaceutical Association of the Pacific Coast.

Dr. Henry Kraemer delivered an illustrated lecture at the Detroit Institute of Technology January 9. In addressing the students of the Department of Pharmacy he said—"The history of pharmacy and the biographies of pharmacists show that another name for pharmacy is opportunity." He concluded with the advice that a man must be loyal to his profession and never permit anyone to persuade or coerce him to say anything which is derogatory to it. The conduct of business should reflect credit upon the man and his associates.

Dr. H. M. Whelpley has presented the records of the late Prof. Charles O. Curtman, as member of the U. S. P. Revision Committee, 1890–1900, to the St. Louis College of Pharmacy. This donation is to become part of an extensive historical museum of the college.

Dr. Caswell A. Mayo recently was honor guest of Cincinnati Chemists' Club. After the dinner he delivered an illustrated lecture on "Some Modern Problems of the Manufacturing Pharmacist."

Dr. Henry H. Rusby addressed a joint meeting of the alumni association and the membership of the College of Pharmacy of the City of New York, January 16. He spoke of his experiences during his recent trip of exploration in South America. His address was illustrated by motion pictures, including those taken of the ceremonies accompanying caapi drinking by the native tribes of Colombia.

Editor Hugo Kantrowitz of the *Apotheker Zeitung* is recovering from a severe attack of the grippe, which kept him from his office for several weeks.

Dr. Royal S. Copeland, senator-elect of New York, has expressed himself in favor of a simplification of regulations of the Revenue Department and is of the opinion, which is gaining strength, that there are too many laws.

Arthur S. Lovenhart, of the University of Wisconsin, addressed students of the biological and chemical sciences at Columbus, on January 18 and 19, under the joint auspices of the Columbus Section of the American Chemical Society, and the Society of Sigma Xi. The titles of the lectures were, "The Relation between Chemical Constitution and Pharmacological Action," and "Biological Oxidation."

Charles D. Walcott, secretary of the Smithsonian Institution and president of the National Academy of Sciences, formerly director of the United States Geological Survey, has been elected president of the American Association for the Advancement of Science.

Chairman E. Fullerton Cook, U. S. P. Revision Committee, delivered an illustrated lecture, open to the public, on "The Making of Medicines," from the time of the Pharaohs to the present, at the Philadelphia College of Pharmacy and Science, January 17.

Prof. C. H. Stocking, of Ann Arbor, reports the omission of his name from the list of registrants at the Cleveland A. Ph. A. meeting. The error, which is regretted, occurred in transcribing the names.

Secretary C. H. Waterbury, N. W. D. A., in a communication, questions the statement made in the sketch of Louis Pasteur, December JOURNAL A. PH. A.—"that among scientists the picture of the latter will be the first to adorn postage;" he refers to that of Benjamin Franklin on U. S. postage. Franklin was a scientist, he may be considered the father of radio, in 1753 the Royal Society of England elected him a member in appreciation of his electrical discoveries and also awarded him the Copley gold medal. Every industry shows his influence, but his Will began with "I, Benjamin Franklin, Printer, late Minister Plenipotentiary from the United States of America to the Court of France..." Evidently he wished to be remembered as "Printer," and, hence, our statement. France and England vied with the United States to honor him, as also the cities of Boston, New York, and Philadelphia; he had a part in every art and

science—the American Federation of Labor claims him; he was the inventor of bifocal lenses, he was interested in flying machines, invented the harmonica, outlined a proper system of insurance; even the medical profession paid respect to his memory in floral wreaths, he was elected to honorary membership in the medical societies of Paris and London in 1777 and 1778, and so we could present other connections and references. Pharmacy also claims him—the recently issued "First Century of the Philadelphia College of Pharmacy," p. 79, states: "... it was Franklin who had John Morgan elected Apothecary of the Pennsylvania Hospital and gave him material aid in his medical studies abroad, so that when he returned to this country, he strenuously fought for the separation of pharmacy from medicine and as a result 'the course pursued by Dr. Morgan may be said to have given the original impulse to the cultivation of the profession of pharmacy and sanctioned its independent existence'...." (Dr. Joseph Carson, 1869).

The *American Druggist* for January published "A brief story of a strenuous life." The illustrations present Louis Pasteur at different life periods and show memorials honoring this scientist.

The *Druggists Circular* for January shows the pharmacy of Louis Serrés of Vosages, France—a free translation of a tablet on this building is quoted: "Here on April 25, 1507, during the reign of Réné II, the members of the Gymnase Vosgien, Gautier Lud, Nicolas Lud, Jean Basin, Mathias Ringmann and Martin Waldseemuller, printed and published 'La Cosmographiæ Introductio,' in which the new continent received the name of America."

United States Naval Medical Bulletin for December published a report of the International Congress of Military Medicine and Pharmacy held in Brussels, July 1921, and of the meeting of the Permanent Committee held in Brussels in February 1922. The report is made by Commander William Seaman Bainbridge (U. S. N.) and covers about 140 pages with a number of illustrations. It is a comprehensive and interesting report.

J. R. Bruce, president of the Bruce Publishing Company, St. Paul, and publisher of the *Northwestern Druggist*, has been appointed publisher and manager of the *Journal of Radiology*, which is devoted to the science of X-ray.

The National Drug Clerk printed and distributed the Code of Ethics, A. Ph. A. The same official publication has also prepared a model questionnaire for employer and employees in the drug business.

The Journal of Industrial and Engineering Chemistry has prepared a list of moving picture films related to chemical subjects; among these are some of interest to pharmacists: Perfumes; Aqua; Chocolate Industry, from bean to cup; Crystallization; Getting Acquainted with Bacteria; Microscopical View of the Blood Circulation; Tea and Coffee. Data regarding the source of these films may be obtained from the publication office.

The Stirring Rod for January is an historical number devoted to pharmacy of the Pacific Coast, and the drug industries of that section.

"The Cousins Book," a book by Walter H. Cousins of the *Southern Pharmaceutical Journal*, has been published by Arthur S. Mathis of Dallas and is having a large sale, not only among druggists but also the laity.

"Pharmaceutical Research," by H. V. Arny, a pamphlet reprinted from "International Clinics," Volume IV, series 32, J. B. Lippincott Company, is being distributed.

Bulletin de la Société d' Histoire de la Pharmacie (Paris), No. 36, contains on p. 126 some complimentary remarks about the Section on Historical Pharmacy of the American Pharmaceutical Association, and the papers read at the Cleveland convention. Two of the contributors, namely, Professor Edward Kremers and Otto Raubenheimer, are also members of the Société d'Histoire de la Pharmacie. In the usual polite French style the abstract concludes with sincere compliments to the members of the Section for their laudable activities in history of pharmacy.

The Pharmaceutical Era, including the *Drug Trade Weekly*, is now issued weekly.

OBITUARY.

FRANK HARMAN GALBRAITH.

Frank H. Galbraith, secretary of the Yahr & Lange Drug Co., Milwaukee, Wis., died at his home in that city, January 6, following a stroke of paralysis. He was born in Hamilton, Ontario, sixty-seven years ago.

Mr. Galbraith spent all of his business life in the wholesale drug business. He came to

the United States some twenty years ago and was associated with Meyer Bros. Drug Co., St. Louis; Minneapolis Drug Co., Minneapolis, and Fuller-Morrisson Co., Chicago, going with the Yahr & Lange Drug Co. in 1919 as secretary and buyer.

Besides Mrs. Galbraith, a daughter, Mrs. C. A. Hobein, of Montclair, N. J., survives.

The deceased joined the American Pharmaceutical Association in 1921.

LOUIS PHILIP OHLIGER.

We are advised of the death of Mr. Louis P. Ohliger, a member of the American Pharmaceutical Association since 1871. The deceased had not been in good health for a number of years and at the time of his death, January 8, resided in California. The body was brought to Wooster, Ohio, a former home, for interment.

Dr. Walter Stanley Haines, Chicago, member of U.S.P. Revision Committee—1900–1920, died January 27. He contributed largely to literature on toxicology and legal medicine.

Mrs. Clement B. Lowe died January 23, and Professor Lowe on February 5, at Vineland, N. J. Mr. and Mrs. Lowe had been in poor health for a year or more. Sketch of the former will appear in March JOURNAL.

Mrs. Philipp Fischelis, wife of Dr. Fischelis of Philadelphia, and mother of our fellow-member, R. P. Fischelis, died recently.

Sympathy is expressed to the bereaved.

SOCIETIES AND COLLEGES.

OFFICERS-ELECT OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The Board of Canvassers—consisting of Chairman E. N. Gathercoal, William Gray, Lewis Martin, Elmer Wirth and George Louis Webster—convened for the counting of ballots, cast for the election of officers of the American Pharmaceutical Association, January 19. They report the election of the following officers and councilors for 1923–1924:

President—H. V. Arny, New York, N. Y.

First Vice-President—Lyman F. Kebler, Washington, D. C.

Second Vice-President—F. E. Bibbins, Indianapolis, Ind.

Third Vice-President—W. Bruce Philip, San Francisco, Cal.

Members of the Council:

James H. Beal, Urbana, Ill.

Charles H. LaWall, Philadelphia, Pa.

Robert P. Fischelis, Newark, N. J.

These officers will be installed at the annual convention to be held next September in Asheville, N. C.

THE SECTION ON HISTORICAL PHARMACY, A. PH. A., WILL PREPARE A HISTORY OF AMERICAN PHARMACY.

The Section on Historical Pharmacy of the American Pharmaceutical Association is preparing a complete, down-to-the-minute history of American Pharmacy for presentation at the 1923 meeting of the Association, to be held during the first week of September at Asheville, N. C.

Clyde L. Eddy, chairman of the Section, is serving as editor of the proposed work and will write an introductory chapter. The other chapters, and the names of their authors, are as follows:

Pharmaceutical Education. By Wortley F. Rudd. A history of pharmaceutical education in America. The development of the colleges, the spirit behind the educational movement. Includes dates of founding of earlier schools, the passage of prerequisite laws, etc., etc. Touches upon government and other recognition, etc. Possibly a forecast of the future.

Pharmacy Laws in America. By H. C. Christensen. The first pharmacy laws. Who has supported the laws. Dates of the passage of the laws in the various states. What the laws include. The movement for reciprocity, etc.

Pharmaceutical Associations. By J. G. Beard. Including a history of the national and state and some of the more important local organizations. The tendency toward organization. What the associations have accomplished, what they plan, etc. The Kansas Plan and others.

The Practice of Pharmacy in Retail Stores. By Robert S. Lehman. How the actual practice of pharmacy has changed. The processes of the old apothecary and the changes made. The daily routine in the old store as compared with present day routine, etc. When the changes occurred and why.

Commercial Pharmacy. By Harry S. Noel. The development of commerical practices in the retail store. Why the change. Origin of cut prices, development of modern sales methods. Origin and growth of chain stores, etc.

Federal Laws Affecting Pharmacy. By Jacob Diner. Stamp or tax, narcotic, prohibition, pure food and drug and other federal laws affecting pharmacy. Why enacted and what their effect has been. Includes dates, etc.

The Pharmacopœias and National Formulary. By E. Fullerton Cook. History of origin and development of the U. S. P. and N. F. Why and how made official, etc.

Biographical Sketches. By Caswell A. Mayo. A series of fifteen "lives" of prominent pharmacists—men who have accomplished *significant* things for the profession. Arranged chronologically, should cover entire period of history of pharmacy in America.

Manufacturing Pharmacy. By A. R. L. Dohme. A history of manufacturing pharmacy. Progress made, beginning with earliest manufacturing on large scale. Scientific progress, various fields covered—comparison of modern manufacturing plant with its earliest prototype. Date and importance of scientific discoveries, etc.

Wholesale Distribution. By C. H. Waterbury. History of wholesale houses, briefly, and development of methods of distribution.

Pharmaceutical Journalism. By Francis B. Hays. The origin and growth of the pharmaceutical journals—their place in pharmacy, etc.

While the task of preparing such a history is an enormous one, Mr. Eddy sees no reason why it cannot be accomplished. The several authors who have volunteered to collaborate on the volume have been at work for several months and report much of the preliminary work already done.

Abstracts of each chapter will be presented by its author at the Asheville meeting and the section will then ask the Association to publish the history in pamphlet or book form. It is not too late for members of the Association to offer suggestions and aid and such assistance is earnestly solicited. Address your communications to the chapter authors direct or to Clyde L. Eddy at 100 William Street, New York City.

CIVIL SERVICE EXAMINATION FOR JUNIOR CHEMIST.

The United States Civil Service Commission announces an open competitive examination for junior chemist beginning March 21. Applications must be received in time to mail examination papers. Vacancies in the Departmental Service, Washington, D. C., at $1200 to $1800 a year (plus "bonus") and in positions requiring similar qualifications, at these or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion. The entrance salary within the range stated will depend upon the qualifications of the appointee as shown in the examination and the duty to which assigned. Appointees whose services are satisfactory may be allowed the increase granted by Congress of $20 a month. All citizens of the United States who meet the requirements, both men and women, may enter this examination; appointing officers, however, have the legal right to specify the sex desired in requesting certification of eligibles. Competitors will be rated on the following subjects, which will have the relative weights indicated:

Subjects.	Weights.
1. General chemistry	20
2. Elementary physics	10
3. Optional subject	40
4. Education, training, and experience.	30
Total	100

IOWA PHARMACEUTICAL ASSOCIATION.

The annual convention of Iowa Pharmaceutical Association was held at the Savery Hotel, Des Moines, Iowa, February 6 and 7.

A large part of the first day was given over to legislative matters. The other business sessions were addressed by well-known speakers on subjects relating to matters of timely interest.

MINNESOTA PHARMACEUTICAL ASSOCIATION.

In connection with the annual convention of the Minnesota Pharmaceutical Association to be held February 20–23 in St. Paul a mammoth Drug Exposition has been arranged for, under the auspices of the Association. The Exposition will be formally opened by the officers of the Minnesota Association at ten o'clock, Tuesday morning, February 20. Inspection of the exhibits will be restricted to pharmacists and their friends during the daytime. In the evening the exposition will be thrown open to the public. The exhibits will be largely of an educational nature. A number of speakers will participate in the program of the Association: Samuel C. Henry, and federal and state officials will discuss legislative problems. H. S. Noel, of Indianapolis, will speak on Business Training and the Pharmacist. John W. Gamble, prominent banker and president of the Standard Chemical Manufacturing Company of Omaha, Nebraska,

will deliver an address on some business subject. Fred P. Mann of Devils Lake, North Dakota, prominent merchandiser and member of the board of directors of the United States Chamber of Commerce, is on the list of speakers tentatively arranged for. Another shining light on the commercial side of pharmacy will be Nels Darling, well known in national drug circles.

The Northwestern Branch A. Ph. A. will participate in the program of the Scientific Section.

ANNUAL DINNER OF THE NEW JERSEY PHARMACEUTICAL ASSOCIATION.

The Third Annual Dinner of New Jersey Pharmaceutical Association was held in Trenton, February 7. A musical program and dancing after the dinner enhanced the evening's entertainment.

OFFICERS OF RHODE ISLAND PHARMACEUTICAL ASSOCIATION.

The following officers were elected by Rhode Island Pharmaceutical Association at the annual meeting convened last month in Providence: *President*, James P. McDonald; *vice-president*, Franklin N. Strickland, North Providence; *treasurer*, Frank R. Keighley, Cranston; *secretary*, Owen E. Barrett, Providence; *executive committee*, Walter J. Batchelder, Providence; Charles F. Gibson, North Providence; Joseph P. McDonald, Providence.

Preparations are being made for the 50th anniversary of the organization in 1924.

CONNECTICUT PHARMACEUTICAL ASSOCIATION HOLDS MID-WINTER SESSION.

A business session of Connecticut Pharmaceutical Association was held at Bridgeport, January 9. The session was concluded with a banquet.

TEXAS PHARMACEUTICAL ASSOCIATION WILL HAVE DRUG SHOW.

Arrangements were made for a drug show at the annual meeting of Texas Pharmaceutical Association next June, by the officials of the organization at a meeting in San Antonio, January 19. The officials met with the Texas Board of Pharmacy, and other members of state boards were present. A banquet closed the meeting.

Edward Walsdorf of New Orleans, president of the National Association of Boards of Pharmacy, brought the greetings of the Louisiana association and made an interesting talk.

Floyd Tillford, president of the Kansas Board of Pharmacy, made valuable suggestions for the advancement of pharmacy.

Walter Jarret of Oklahoma, chairman of the executive committee of the national body, related experiences in the advancement of pharmacy in Oklahoma.

The principal address of the evening was that of Secretary H. C. Christensen of Chicago, of the National Association of Boards of Pharmacy.

DETROIT RETAIL DRUGGISTS' ASSOCIATION.

At the recent meeting of Detroit Retail Druggists' Association Glen Staines was chosen president for 1923, with Fred Bellemore and Albert Filer as first and second vice-presidents, respectively. Clayton Campbell is the new treasurer, and R. T. Lakey was elected secretary. John Webster, George Grommet, William Kaminski, Albert Tiesterer, Dan Houser, Ralph Mosser, A. P. Hill, J. N. Ciechanowski, Gordon Leacock and George Berg were chosen members of the executive committee.

President Frank Bogart of the N. W. D. A. addressed the Association on "Too Much Legislation."

PHILADELPHIA ASSOCIATION OF RETAIL DRUGGISTS ACQUIRES HOME.

The Philadelphia Association of Retail Druggists has acquired a new home, thus showing faith in the purpose of their organization. President Joseph W. Noble is credited with being father of the movement and much credit for success is given to W. Wilson McNeary, chairman of the building committee, and Ambrose Hunsberger, a former president and last year's presiding officer of the N. A. R. D.

NEW YORK VETERAN DRUGGISTS ASSOCIATION.

For some time the formation of a New York Veteran Druggists Association has been under consideration. A call was issued and about 25 Veterans representing retail, wholesale and manufacturing pharmacy, the pharmaceutical press and pharmaceutical faculties assembled at an informal gathering and lunch at the Chemists' Club, New York City, on Tuesday, January 9th. At this meeting the New York Veteran Druggists Association was born.

The requirements for admission were fixed at 50 years of age with at least 25 years of experience. The following officers were elected:

Honorary Members, Wilhelm Bodemann, F. B. Hays and Prof. Charles F. Chandler; *Honorary President*, Thomas D. McElhenie; *President*, H. V. Arny; *Vice-President*, Benj. F. Fairchild; *Secretary*, Robert S. Lehman; *Treasurer*, Leon Lascoff; *Executive Committee*, Horatio Fraser and Prof. Otto Raubenheimer.

PHILADELPHIA DRUG EXCHANGE ANNUAL MEETING.

The sixty-second annual meeting of the Philadelphia Drug Exchange took place January 23. Vice-president Milton Campbell and Walter V. Smith took the place of President Charles E. Hires and Secretary Joseph W. England, respectively, both of whom were unable to attend because of illness. The annual dinner was held January 25.

In his annual message President Hires briefly reviewed the history of Philadelphia during that period of the Drug Exchange. Passing from that, he detailed the growth and accomplishments of the Exchange itself. Statistics of the industry during recent years occupied the report on business and financial conditions by Secretary England. The annual report was comprehensive and the different phases of the drug trade activities were discussed by individuals whose information qualified them to speak on the subjects assigned them. The president's message and that of the secretary have been briefly referred to; much credit for the report is due the latter. Conditions in the drug, chemical and allied industries were reviewed as follows:

Legislation, C. Mahlon Kline; Crude Drugs and Drug Milling, Herbert R. McIlvaine; Medicinal Chemicals, F. L. Bodman; Heavy and Technical Chemicals, Alex. C. Fergusson, Jr.; Volatile Oils, J. F. Pond; Pharmaceuticals and Biologics, Milton Campbell; Proprietary Goods, Miers Busch; Paints, Oils and Varnishes, C. Stanley French; Advertising, Selling and Transportation, Harrison S. Hires; Accounting, Credits and Collections, Walter V. Smith; Liability and Compensation, Adam Pfromm; Fire Insurance, A. L. Hilles, Jr.; Scientific Research, Dr. A. W. Miller.

The annual dinner was held at the Bellevue Stratford Hotel, January 25, with an attendance in the neighborhood of 150. A. B. Kelley acted as toastmaster. Much credit for the success of the entertainment is due the Entertainment Committee—Chairman, Herbert R. McIlvaine; Charles E. Hires; Albert L. Hilles, Jr.; Walter V. Smith; Abraham L. Atkiss; Joseph W. England; Harrison Hires, and Edward M. Massey.

The menu was of the kind for which the Bellevue-Stratford is famed; the music was good. Admiral William C. Braisted, president of the Philadelphia College of Pharmacy and Science, Hon. Harold Wells of the Supreme Court of New Jersey, and Dr. Frank Aydelotte, president of Swarthmore College, made inspiring and interesting speeches. A moving picture exhibition closed the evening's entertainment.

The following officers were elected for the ensuing year: *President*, Charles E. Hires; *Vice-president*, Milton Campbell; *Secretary*, Joseph W. England; *Treasurer*, A. L. Hilles, Jr.; *Board of Directors*, Herbert R. McIlvaine, Dr. Adolph W. Miller, Adam Pfromm, C. Stanley French, Miers Busch, F. L. Bodman, Walter V. Smith, C. Mahlon Kline.

GREATER BUFFALO DRUG CLUB.

Dean Willis G. Gregory, of the pharmaceutical college of the University of Buffalo, N. Y., delivered an address of welcome to the women guests of the Greater Buffalo Drug Club on the occasion of "Ladies' Night" on January 11th. Upward of 200 attended the dinner, entertainment and dance at the Ellicott club.

THE PHARMACIST AND THE LAW.

STATEMENT RELATIVE TO NARCOTIC SALES QUESTIONED.

Commissioner Roy Haynes was entertained at a banquet by the San Francisco Center January 22. A report states that the Commissioner made the statement "that narcotics could be bought in all drug stores prior to 1915 like any drug as quinine, etc." One of the druggists who attended the dinner checked his records and found that since 1880 narcotics had not been sold except on a physician's order. The statement, if made as quoted, should be corrected and due publicity thereof should be given.

The following data are only given to disprove "that narcotics were sold in all drug stores prior to 1915 like any drug as quinine, etc." Arkansas had a law prohibiting sales except by prescription in 1905; Oregon and Texas in

1902; Wisconsin in 1898; during the periods given many states passed narcotic laws. It is suggested that the year in which narcotic laws were first enacted be given in the next revision of "State Laws;" in the issue of 1920 dates of amending the existing laws are given, but not those of the original drafts. In 1903, Dr. J. H. Beal presented a draft of a bill "to provide against the evils resulting from traffic in certain narcotic drugs and to regulate the sale thereof," before Section on Education and Legislation, A. Ph. A. (Proceedings, 1903, p. 482).

PROPOSED BILL FOR NARCOTIC CONTROL.

Senator France introduced in the Senate a measure providing for financial aid from the United States for the states in the prevention of drug addiction and for the care and treatment of drug addicts. The bill appropriates $3,000,000 for the fiscal year ending June 30, 1920, and $2,000,000 for the fiscal year ending June 30, 1921. The Secretary of the Treasury is authorized to coöperate with the states, through their respective state boards or departments of health, narcotic commissions or other state or municipal officers in charge of the control of the production or distribution of narcotics and habit-forming drugs, or in charge of the care and treatment of drug addicts resident within the confines of their states. He is empowered to allot among the states appropriations of federal money for this purpose to an amount not to exceed the sum appropriated by the state for the same purpose. The Secretary of the Treasury may also permit the use by any state or municipality of any hospital or other building, equipment and medical supplies, including any narcotic drugs, in the possession of and under the control of the U. S. Public Health Service.—*Journal A. M. A.*

"LAW-MADE LAWLESSNESS."

In an address before the Ohio State Bar Association, January 26, Dr. Nicholas Murray Butler, of Columbia University, referred in the terms of Thomas Jefferson to the average legislator of to-day, as a "demi-lawyer," and stated that their ruling passion seemed to be "a statute or an administrative order." He declared that their appeal is constantly to force which they desire to see exercised with "a ruthlessness and ferocity from which Kings and Emperors have been accustomed to draw back." He said that those who believe that any enactment duly passed by a legislative body and upheld by a court is effective are suffering an illusion, for "there is a silent referendum in the hearts and minds of men on every important enactment which involves a fundamental principle of civil liberty. Without a favorable decision in that referendum, the statute and decision alike are written in water."

Quoting former Senator Thomas of Colorado, Dr. Butler declared that during the last few years Americans have passed approximately 70,000 statutes, state and national. "The time has come," he continued, "when the public-spirited legislator could vote 'no' on every roll call in respect to final passage of bills, and be certain of rendering public service nine times out of ten. The common law will take care of our developing needs in a far better fashion than statutes in all but a very small class of cases. The influence of a sound education and a true religion, if really believed in instead of merely being talked about, would in time build up a spirit of obedience to law, which no possible system of law enforcement can ever hope to bring about. Through centuries the habit of obedience to the Ten Commandments can be built up among men, but the Ten Commandments cannot be enforced by all the Governments and armies in Christendom."

AMENDMENT OF ARTICLES 117, 119 AND 148, REGULATIONS 35, REVISED BY T. D. 3426, ISSUED JANUARY 12.

1. The second paragraph of Article 117, Regulations 35, Revised, is amended to read as follows:

"*Exceptions.*—Exceptions to this rule may be properly recognized (1) in the treatment of incurable disease, such as cancer, advanced tuberculosis, and other diseases well recognized as coming within this class, where the physician directly in charge of a bona fide patient suffering from such disease prescribed for such patient, in the course of his professional practice and strictly for legitimate medical purposes, and in so prescribing, indorses upon the prescription that the drug is dispensed in the treatment of an incurable disease (or if he prefers he may indorse upon the prescription 'Exception (1) Art. 117') and (2) where the attending physician prescribes for an aged and infirm addict whose collapse from the withdrawal of the drug would result in death and in which case he indorses upon the prescription that the patient is aged and infirm, giving age, and that the drug is necessary to sustain life (or if he prefers he may indorse upon the prescription 'Exception (2) Art. 117')."

2. The second paragraph of Article 119, Regulations 35, Revised is amended to read as follows:

"*Druggists.*—The druggist who fills a prescription must preserve the prescription for a period of two years from the date indicated thereon. (See Art. 124.)"

3. Article 148, Regulations 35, Revised, is amended by striking out the word "signature" and substituting therefore the word "name" both in the fourth sentence thereof and in the heading of the second column of the form therein prescribed of record to be kept by retail dealers.

PHILADELPHIA DRUG EXCHANGE FAVORS OFFICIAL RECOGNITION OF BRANDY AND WHISKY.

The following quotations are from a report of a Committee of the Philadelphia Drug Exchange:

"At present, the U. S. Pharmacopœia and National Formulary provide no standards for the identity, purity, quality and strength of medicinal liquors, and in consequence thereof the market is flooded with liquors of the most variable strength and grossest impurity, or worse, with factitious products that cause disease, paralysis, blindness and death.

"If there were official standards for medicinal liquors under the law, the quality of such liquors could be legally controlled by the Internal Revenue Department acting in coöperation with the Bureau of Chemistry of the Department of Agriculture under the Federal Food and Drugs Act. . . .

"Recently a regu'ation has been issued by the Treasury Department that whisky shall be sold for medicinal purposes in bottles of pint and half pint sizes, "bottled in bond" and put out under the seal of the government, so as to ensure purity. This is a distinct step forward, but it does not go far enough; it should be coupled with the official recognition of brandy and whisky and the label of the packages should state that the product meets with all the requirements of the U. S. Pharmacopœia. Then there would be 'teeth' in the label. . . ."

BOOK NOTICES AND REVIEWS.

Year Book of Pharmacy with Transactions of the British Pharmaceutical Conference held in Nottingham, July 24 to 28, 1922. J. O. Braithwaite, Editor of the Abstracts, Thomas Stephenson, Compiler of New Remedies Section, C. E. Hampshire, Editor of the Transactions. 2 mo. 546 pages. Cloth. London, J. & A. Churchill, 1922.

This exponent of British scientific pharmacy resembles the old "Proceedings" of the American Pharmaceutical Association. Even as the old "Proceedings" covered the transactions of our Association and abstracts from pharmaceutical and other journals of the year, so the "Year Book" covers the transactions of the 1922 meeting of the British Pharmaceutical Conference and also abstracts of the year.

In the 1922 "Year Book" 339 pages are given to abstracts; 133 pages to the minutes of the Nottingham meeting, 23 pages to the membership list and 47 pages to indices; general and authors. The minutes are made interesting by the admirable address of President Greenish and by 14 original papers. As to the abstract portion, we find therein 698 condensed reviews of journal articles and a list of 65 new remedies described in some detail. This portion is admirably and judiciously edited although not as comprehensively as the A. Ph. A. YEAR BOOK, the last volume of which covered 692 pages and included 1630 abstracts and notes on 600 new remedies. Of the abstracts in the British "Year Book" 61 were of American origin, most of these being from our own JOURNAL.

This "Year Book" is a worthy companion in any pharmaceutical library to our own A. Ph. A. YEAR BOOK and in scanning the well-edited pages of its abstract portion, one feels the desirability of friendly coöperation between the two publications. This idea of coöperation, similar to that now existing between *Chemical Abstracts* in America and the *Journal of the Society of Chemical Industry* and the *Journal of the Chemical Society* in England has been broached and it is hoped that future years may bring about its fruition. H. V. A.

The Eclectic Materia Medica, Pharmacology and Therapeutics. By Harvey Wickes Felter, M.D., Professor of Materia Medica and Therapeutics, and of the History of Medicine in the Eclectic Medical College of Cincinnati, Ohio; Ex-President and Member of the National Eclectic Medical Association; Ex-President and Member of the Ohio State Eclectic Medical Association, etc. Forty-eight full page halftone plates. 702 pp. Cincinnati, Ohio, John K. Scudder.

This volume represents a great deal of original research and presents in a very clear and easily comprehended manner the attitude of

the eclectic physician toward therapeutics. All this is set forth in the introduction, and a study of this part of the work will help the reader to understand the attitude of the eclectic physician to what he terms "specific" medication. Its study will well repay the pharmacist, for the eclectic school has been grossly misrepresented at times and is but little understood except by those who follow its teachings.

The major portion of the book, something like six hundred pages, is devoted to a study of individual drugs, the botanical sources, habitat, constituents, indications and uses being treated quite fully. One of the most interesting features of the work is the historical data regarding the indigenous materia medica which is presented in the course of these monographs on the individual drugs.

While the subject matter is presented from the eclectic point of view, the facts are set forth clearly and the author presents a very interesting accumulation of data regarding the uses of these drugs. Dr. Felter brings to this task a long experience as a teacher, as an editor and as a practicing physician, and the volume is one which reflects credit upon himself, upon the school which he represents and upon the publisher who has put it out in a very attractive form. C. A. M.

Pharmaceutical and Food Analysis. By Azor Thurston. 409 pp., and index. Price, $4.50. D. Van Nostrand and Company, New York City.

This work, as the title indicates, was originally intended to cover all phases of Food and Drug Analysis but, after assembling part of the data, the author restricted it entirely to the analysis of oils, fats, waxes and allied substances. Much of the data presented was assembled during his seventeen years of service as chemist for the Ohio Dairy and Food Department.

Due to the death of the author, final preparation of the work was carried on by B. L. Murray, chemist for Merck and Company.

In the two introductory chapters various types of polariscopes and refractometers are discussed—their use and application in analytical procedure; another chapter considers specific gravity and the methods of determining the gravity of various types of substances.

The chapters following are devoted to General Methods of Analysis: Oils, Fats and Waxes; Dairy Products; Flesh Foods; Eggs and Egg Substitutes and Volatile Oils. Each substance is found under its own heading in English; French, German and Italian names are appended. The source of the article, method of manufacture and purification and its physical characteristics are given, and also its chemical constants. Special methods of analyses are included wherever these are deemed necessary, and also tests for well-known adulterants.

The author has covered all of the oils, fats and waxes official in the Pharmacopœia, and many others of commercial value. While each substance is quite extensively considered, there is an occasional exclusion or omission of important data, and a few typographical errors have been overlooked.

Note should be made of the misplacement of several paragraphs under Milk Serum, page 184. Paragraphs four and six on page 185 should immediately follow the paragraph carried over from the preceding page; the table which appears at the top of page 186 should then be included.

On page 228 under Lactose the word sucrose is inadvertently inserted instead of lactose; the method for determining the solids in sweetened condensed milk on page 229 should be changed to read—proceed as under Milk—*drying on either sand or asbestos fiber.*

Under the method for determining by the Reichert Meissl on page 242, no mention is made of the Leffmann-Beam Method of saponification, although it is referred to on page 254 under the Polenske number.

When discussing the refractive index of oleomargarine and butter, on page 244, mention should be made of the refractive index of the so-called "nut-butters" which read below that of butter, namely, from 1.4500 to 1.4525.

The statement of the average weight of an egg, on page 289, is undoubtedly a typographical error; it should read 57 grams, or 680 grams to the dozen.

On pages 350 and 362 an incorrect factor is given for determining the amount of menthol in oil of peppermint, and borneol in oil of rosemary. The factor given was evidently obtained from an early edition of the U. S. P. IX which was later corrected to read as follows:

$$\frac{A \times 7.808}{B-(A \times 0.021)} \times [1-(E \times 0.0021)].$$

E is the per cent. of esters as menthyl acetate or bornyl acetate.

While the work covers practically all the important fats, oils and waxes it of course is

not intended to replace such standards as Lewkowitch on "Oils and Allied Substances," Parry, or Gildemeister and Hoffmann on "Volatile Oils."

Probably the most valuable part of the work is the comprehensive bibliography following each product considered, whereby quick reference is possible to all work of importance published in the recognized periodicals.

J. W. E. HARRISSON.

The following publications are from the well-known publisher, Theodor Steinkopff, Dresden-Blasewitz, who also publishes the *Pharmazeutische Zentralhalle*. All in octavo volumes.

Das Ferment-problem von Dr. Andor Fodor. 280 pp., with 24 figures in the text and numerous tables. The author of this book is professor of physiological chemistry at the University of Halle, and is a recognized authority on the subject of ferments. The 5 chapters are arranged as follows: Historical Introduction, Biochemical Phenomenon, Physical-Chemical Phenomenon, Colloidal-Chemical Phenomenon and Ferment-Colloid systems.

The subject of ferments is of great importance in pharmacy as the pharmacist in his daily work is in constant touch with amylase, amylopsin, diastase, emulsin, oxydases, pancreatin, pepsin, rennin, steapsin, trypsin, yeast, etc. It is for this reason that a scientific treatise on ferments, as the one before us, written by an expert, should be read and studied by all those interested in the subject.

Leitfaden der Kolloidchemie, von Dr. Hans Handovsky. 206 pp., with 33 illustrations, 27 tables and 1 plate.

When Thomas Graham, F.R.S., and Master of the Mints, read his paper, "Liquid Diffusion Applied to Analysis," before the Royal Society of London, June 13, 1861, he laid the foundation to Colloid Chemistry, which was destined to become the "missing link" between physics and chemistry. No less an authority than Professor Wolfgang Ostwald, well known as an "exchange professor" on this side of the Atlantic, wrote an introduction to the book before us, which is from the pen of an assistant at the Pharmacologic Institute of the University of Göttingen.

We want to call special attention to the chapter of the text: "The use of colloidal experience for the explanation of biologic problems," a subject of great importance to pharmacists, physicians and chemists. The author has achieved a real success as he has collected within a small volume a great quantity of material hitherto inaccessible except in the periodical literature, monographs or dissertations.

Theorie und Praxis des Küchenbetriebes, von Dr. J. Roland. 292 pp.

Kitchen-Chemistry and Technology of the Kitchen is an appropriate title of the book. It deals with meat and meat products, eggs and dairy products, fats and oils, flour and cereals, sugar, fruit, coffee, tea, cacao and chocolate and last, but not least, spices. The chemistry and technology of all of these are given and the "reasons why" they are used and how they should be used are thoroughly explained. Surely such a book is needed badly. Even the kitchen household is to-day put on a scientific basis. An appendix to the book is the *Pilzmerkblatt*, published by the Imperial Health Board in Berlin, which gives full description of the edible and also the poisonous fungi together with colored illustrations.

The knowledge to be gained by reading Roland's book can be utilized to good advantage.

OTTO RAUBENHEIMER, PH.M.

PUBLICATIONS RECEIVED.

Bulletin of the Massachusetts College of Pharmacy.—Library Number, 1922.

This bulletin gives a history of the library of the Massachusetts College of Pharmacy; much of the historical report is devoted to the contributions made by the late S. A. D. Sheppard. Recent additions to the library, which now contains about 6000 bound volumes, are listed on pages 13–24. A full-page life-like picture of Samuel A. D. Sheppard is included, also a page of the first catalogue, 1829, and a view of the library.